MINING WORLD

APRIL 15, 1951
VOL. 13 No. 4

MINE DEVELOPMENT AND DIRECTORY NUMBER

METAL MINING IN 1950

★

DIRECTORY OF ACTIVE MINES

★

"EUCS"

Are Your Best Bet!

FOR BIG LOADS

FOR LONG HAULS

FOR SHORT HAULS

FOR LASTING STRENGTH

Because of their rugged construction and dependable performance, Rear-Dump Euclids are standard equipment on hundreds of mine, quarry, and construction jobs. For moving rock, ore, overburden and other heavy excavation, "Eucs" have the capacity and speed to haul bigger loads faster and at lower cost per ton or yard moved.

Look at the record! Of the thousands built, nine out of eleven Euclids are still in use today! They're job proved... have earned their reputation for staying power, low-cost production and efficient operation on a wide range of work.

Owners know from experience that they can depend on prompt, efficient service from Euclid's world-wide distributor organization.

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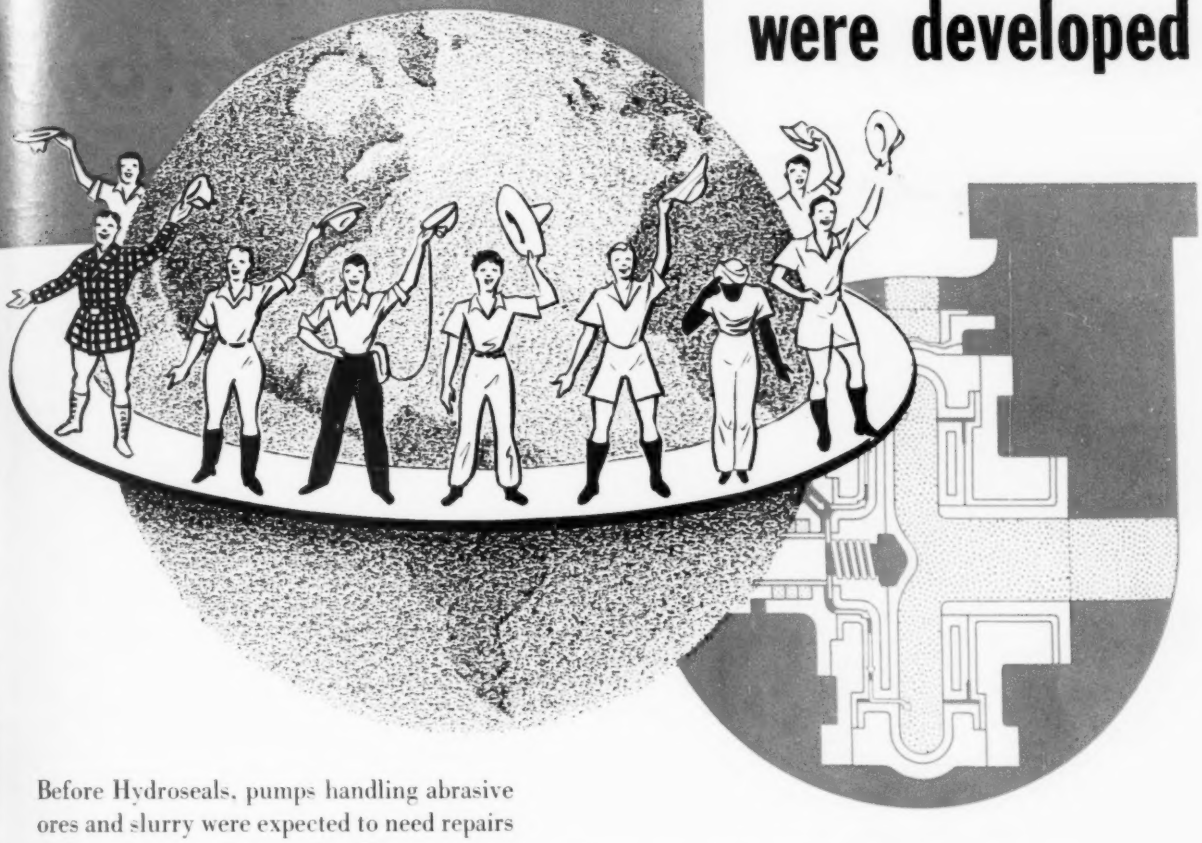
The EUCLID ROAD MACHINERY Co., CLEVELAND 17, OHIO

EUCLIDS *Move the Earth*

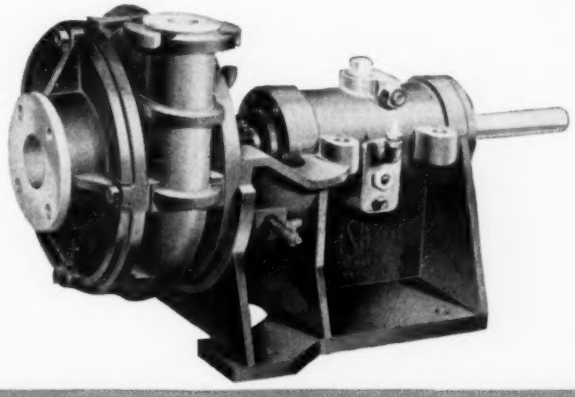
Milling Engineers had a tough time pumping ore until Hydroseals were developed



Before Hydroseals, pumps handling abrasive ores and slurry were expected to need repairs and new parts frequently. Because wear rapidly reduced their capacities, pumps were engineered oversize. So, initial costs as well as maintenance were high.

This picture was changed by the Hydroseal principle and the wear-resisting materials effected by Allen-Sherman-Hoff research. Today, tremendous tonnages of ores are pumped without shutdowns, and at savings in power. All over the world, milling engineers take their hats off to rugged Hydroseals for their efficiency and economy.

No matter what you are milling or where, our specialists can help you. Write now.



THE ALLEN-SHERMAN-HOFF CO.
223 South 15th Street • Philadelphia 2, Pa.
Representatives in Most Principal Cities

HYDROSEAL SAND, SLURRY & DREDGE PUMPS
MAXIMIX RUBBER PROTECTED

HYDROSEAL, PACKLESS AND MAXIMIX DESIGNS ARE COVERED BY PATENTS AND APPLICATIONS IN THE MAJOR MINING CENTERS OF THE WORLD

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FOUR ROADS TO SUCCESS

For over fifty years Boyles Bros. has led the field of diamond drilling for exploration, long-hole, tunneling and rock breaking. This distinguished service to the mining and contracting industry is the result of carefully trained personnel, proper equipment, expert engineering technique and unqualified service.

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STANDARD ENGINEER'S REPORT

DATA

LUBRICANT Calol Vistac Oil

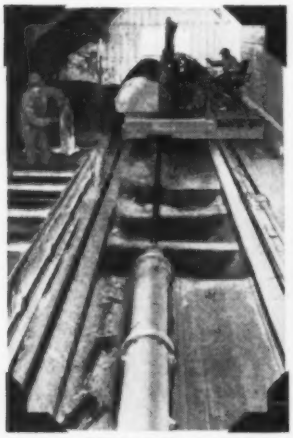
UNIT Bearings + air cylinders

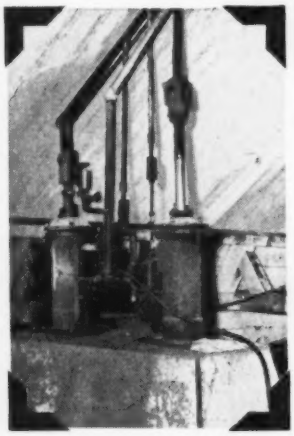
LUBRICATOR Mechanical-line feed

PERIOD 2½ years

FIRM Mt. June Forest Products Co., Springfield, Oregon

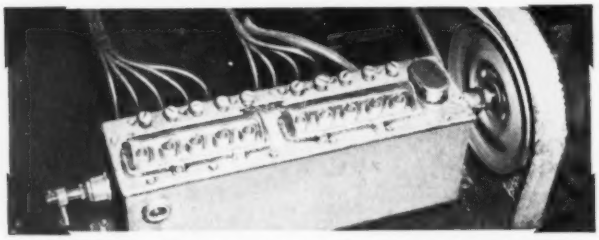
Bearing- and air-power-cylinder trouble stopped by tacky oil!





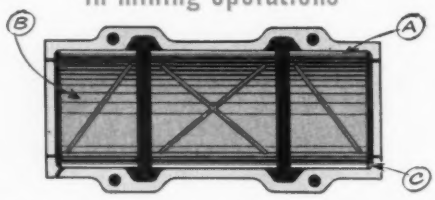
CALOL VISTAC OIL, lubricating air power-cylinders (above) and all heavy-duty plain bearings in the Mt. June Forest Products Company mill, prevented any production delays due to lubrication in this mill's 2½ years of operation. "Using another brand under similar conditions at another mill I was constantly losing bearings," says Ed Glaspey, Foreman.

THIS AIR CYLINDER AND PISTON, lubricated by Calol Vistac Oil, was in constant use in the mill for more than a year. Note the excellent condition of the cylinder walls and the neoprene seal on the piston.



A FORCE-FEED OILER supplied lubricant through lines to air units and bearings. Calol Vistac Oil may also be applied by drip-feed oilers and lighter grades by wick-feed and ring-oilers. It comes in grades to meet operating conditions in many industries.

How CALOL VISTAC Oil cuts costs in mining operations



Has wide use range in heavy-duty plain bearings operating in hard service, rock drills and other mine machinery, motor gear-heads, etc.; excellent air-tool lubricant—atomizes quickly and stays fluid at low temperatures.

A. Additives help form oily, pressure-resistant film...sticks on slow-moving parts and resists high temperatures.

B. Economical—small quantity will lubricate efficiently, dissipate heat.

C. Tenacious film cuts power loss and wear.

FREE CATALOG: "How to Save Money on Industrial, Marine, Railroad Equipment Operations," a new booklet full of valuable information, is ready for you. Write or ask for your free copy today.

CALOL

STANDARD TECHNICAL SERVICE checked this product performance. For expert help on lubrication or fuel problems, call your Standard Fuel and Lubricant Engineer or Representative; or write Standard Oil Company of California, 225 Bush St., San Francisco.

TRADEMARK "CALOL" REG. U.S. PAT. OFF.

STANDARD OIL COMPANY OF CALIFORNIA

The New TELSMITH GYRASPHERE Crushers...

Send for Bulletin No. 274

TWO new MODELS

Style S—Standard
Style FC—Fine Crushing

Style S—Standard Gyrasphere has—

1. Longer Crushing Stroke giving greater capacity.
2. Larger Roller Thrust Bearings, both now located at top of eccentric.
3. More Eccentric Bearing Area in upper crushing zone.
4. Longer Springs to pass larger tramp iron.
5. New Location of Drive Gears for more economical operation.
6. Easier Accessibility for lower maintenance.
7. Available with either coarse or medium bowl.

Style FC—Fine Crushing Gyrasphere has these additional improvements—

1. New Feed Distributor for even feeding and a more uniform product.
2. Different Shape of Mantle and Concave with longer parallel crushing zone for finer product.
3. New Gun-Lock type mantle and concave holding devices — automatically self-tightening, easier to change.
4. More Springs for greater crushing pressures.
5. Available with either medium or fine bowl.

Y-9

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Mine & Smelter Supply Co., Denver 17, Colo. — Mines Eng. & Equip. Co., San Francisco 4, Calif. — Lee Redman Equip. Co., Phoenix, Arizona — Garlinghouse Bros., Los Angeles 21, Calif. — General Machinery Co., Spokane 1, Wash.

Clyde Equipment Co., Portland 9, Ore. Seattle 4, Wash. — The Sawtooth Company, Boise, Idaho — Montana Powder & Equip. Co., Helena and Billings, Mont. — Gordon Russell, Ltd., Vancouver, B. C.

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America's No. 1 Mine Car Wheel!

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FOR FASTER . . . CHEAPER HAULING

Independent engineering firm tests prove that locomotives can pull up to 50% greater loads with no additional power requirement when cars are equipped with S-D "Floaters" instead of other types of precision bearing wheels . . . a big power and time saver!

"FLOATERS"

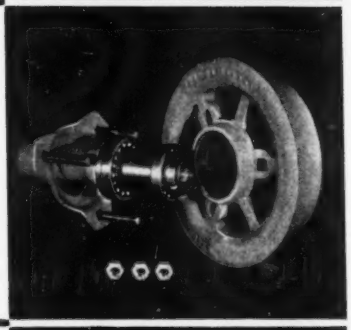
FOR LESS MAINTENANCE . . .

With "Floater's" solid closed front hub, and back double seal, grease stays in the wheel, dust and dirt stay out. Often "Floaters" require greasing no more than once in five years.

"FLOATERS"

FOR QUICK DEMOUNTABILITY

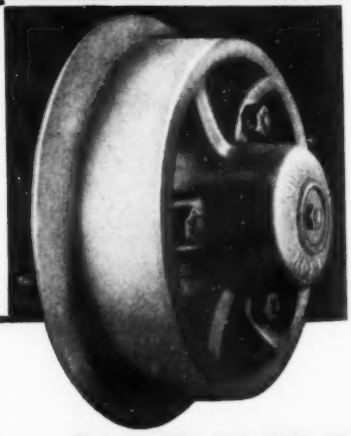
Any unskilled worker can remove and replace a "Floater" as easily as changing an automobile wheel. Bearings always remain in perfect adjustment on axle. When replaced there's no chance of pinching, misalignment, loose or tight bearings.



"FLOATERS"

FOR LONGER WHEEL LIFE

We believe our own special mixture of iron and exclusive heat treatment are responsible for making "Floaters" famous for their toughness and long wear . . . such quality is your assurance of perfect satisfaction.



Try S-D "Floaters". Check their savings. Experience proves that once an operator knows what "Floaters" will do for him, he specifies smooth-running "Floaters" for all wheel replacements. For complete information, write Sanford-Day Iron Works, Knoxville, Tenn.

SANFORD-DAY IRON WORKS

We know mine power and shovel cable

—we're miners ourselves!

Power shovel loading blasted copper ore in the Chuquicamata, Chile, open pit mine of the Chile Exploration Company, an Anaconda subsidiary.

We know what ANACONDA Mine Power Cable and SH-D Securityflex Shovel Cable can do for your production because we're miners ourselves. We watch their performance in our own mines.

Here are the important features of ANACONDA Mine Power and Shovel Cables that produce more mine output per dollar of cable investment and maintenance:

Butyl Insulation for higher dielectric strength and resistance to moisture; for less damage by heat and compression.

Neoprene Jacket and Fillers for light weight, flexibility, flame resistance, freedom from electrolysis. Neoprene makes a tougher jacket, costs you less, makes cable more adaptable, easier to handle.

Special Features of Type SH-D Securityflex Shovel Cable are its patented non-kinking rubber-cored ground wires that provide large contact area with the conductor shield; the copper-cotton conductor shield that eliminates chafing failures, greatly simplifies splicing.

Ask your nearest Anaconda Sales Office or Anaconda Distributor for complete information. Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York.

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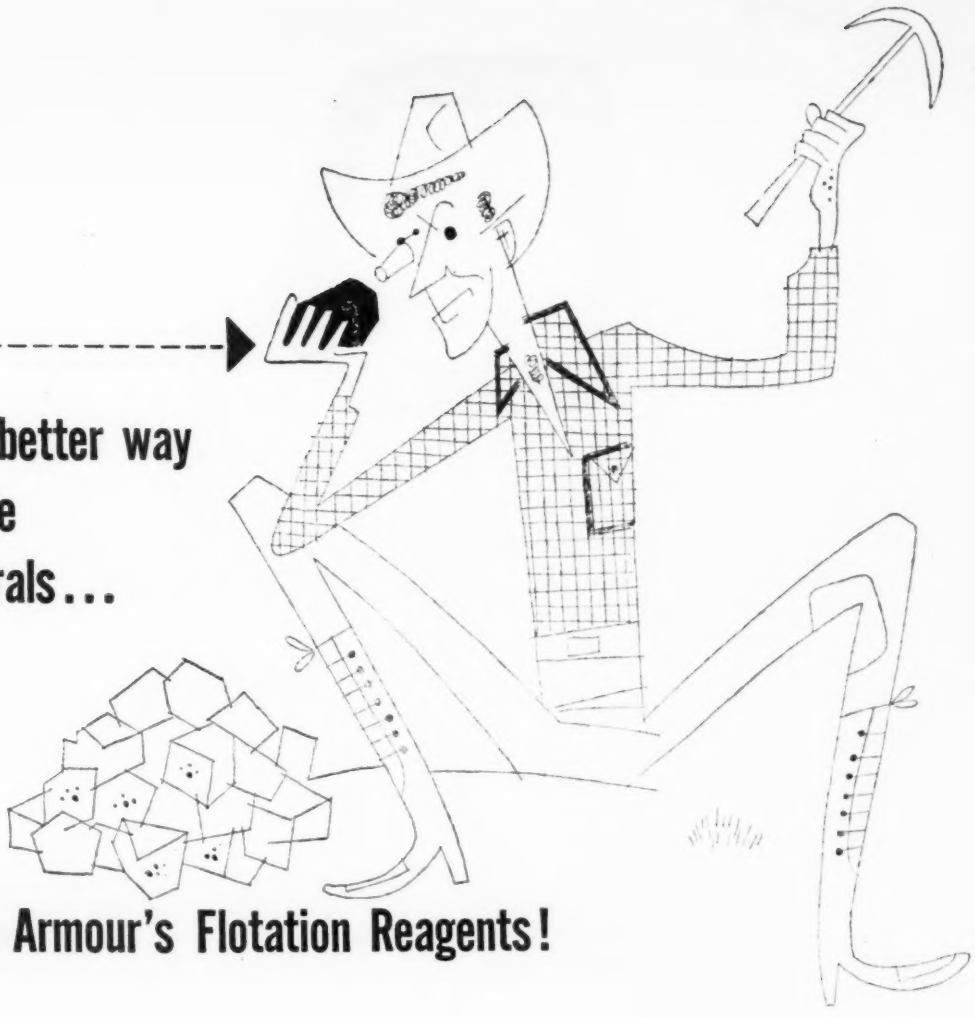


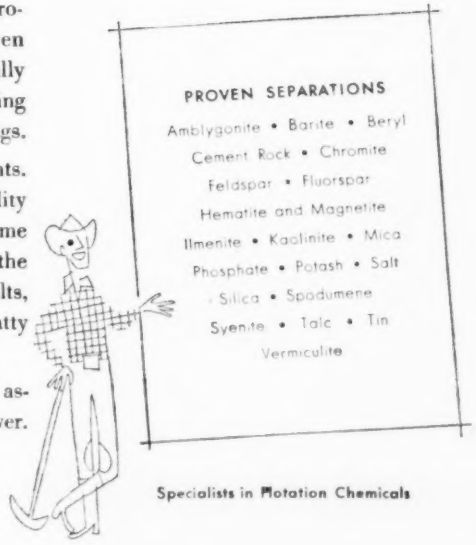
There's a better way to separate your minerals...

Use Armour's Flotation Reagents!

Froth flotation, the modern mining method, means longer life, greater productivity and more economical separations for your mine. Yields of a given ore are raised by: (1) making separations once considered economically impossible, (2) making higher grade concentrates possible, (3) recovering more than one concentrate and (4) concentrating minerals lost in tailings.

Vital to profitable flotation is the uniform high quality of the reagents. The pioneering Armour Chemical Division produces a wide range of quality chemical reagents—both anionic and cationic. In the anionic category come Armour's fractionally-distilled fatty acids. The cationic group includes the high molecular weight aliphatic amines and their water soluble amine salts, as well as quaternary ammonium salts. Armour manufactures these fatty acids and fatty acid derivatives under the strictest chemical control.

If you have a separation problem involving the listed ores and their associated minerals, Armour's technical service staff may provide the answer. Write today for more information.



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Excellent fragmentation from "Nitramon" —"Nitramex" No. 2 blast.

Blasting is SAFER and more ECONOMICAL

. . . at the Mesabi Chief Mine where Du Pont "Nitramon" and "Nitramex" No. 2 cut production costs

The stripping program at this M. A. Hanna Company mine in Keewatin, Minnesota, calls for the shooting of 1,800,000 cubic yards of taconite during a six-month period. Naturally, economy and safety were important factors on this job. That's why the dependable team of Du Pont "Nitramon"* and "Nitramex"** No. 2 blasting agents were selected.

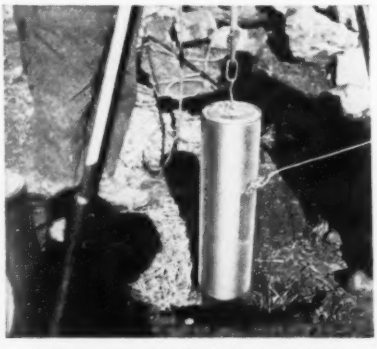
Safety is an outstanding characteristic of both "Nitramon" and "Nitramex" No. 2. They cannot be detonated by friction, "Primacord" or even the impact of ball ammunition. Yet they are readily detonated with "Nitramon" Primer, fired with "Primacord."

Extra convenience speeds work when these dependable blasting agents are used. "Nitramon" and "Nitramex" No. 2 are packaged in sturdy, water-resistant metal containers. And since they contain no nitroglycerin, they're non-headache producing. This means less trouble . . . faster work.

Results are far superior to those obtained with ordinary explosives. Fragmentation is excellent even when holes are widely spaced in the tough-shooting taconite. And bottoms pull exceedingly well. The well-broken rock allows shovels to proceed on an uninterrupted schedule.

Ask any Du Pont Explosives representative for complete information about these or any other Du Pont blasting products for safer and more economical ore production. E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington 98, Delaware.

Loading crew lower "Nitramex" No. 2 into a hole. Holes average 35 ft. in depth, are spaced 27 x 27 ft.



Shots are easily and quickly primed with "Nitramon" Primer. Average load per hole is about 600 lbs.

*Reg. trade-mark for nitrocarbonitrate blasting agent
**Reg. trade-mark for ammonium nitrate blasting agent

DU PONT "NITRAMEX" No. 2

Not currently for sale in western states

DU PONT

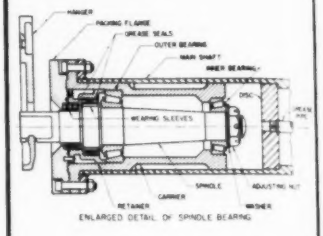
BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

Heres why an AKINS

Lower costs depend upon production volume; the key to production volume is mechanization, and the key to mechanization is standardization. That's the reason the spirals of AKINS Classifiers have been standardized at a pitch of half the diameter. By using the design that independent tests and our own laboratory experiments prove is best, it is possible to give you a stronger, more economical classifier for your money.

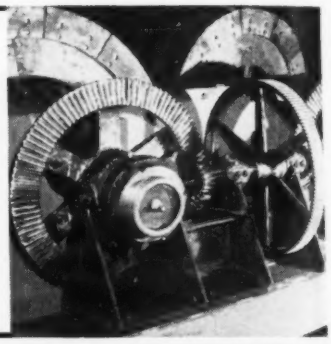
Compare these construction details with any other machine on the market:

BEARINGS **Standard** Timken tapered roller bearings support the main shaft at the lower end. The submerged bearing is of patented design, together with the centralized method of lubrication, and provides a water- and grease-tight bearing chamber. Grease seals are easily inspected and renewed without exposing the bearing parts to grit and dirt. Both the upper and lower shaft bearings are lubricated from the same spot, and will provide long, trouble-free life.

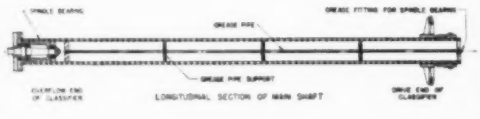


ENLARGED DETAIL OF SPINDLE BEARING

DRIVE GEARS **Standard** pitch gears are used to match any standard drive mechanism. The recommended AKINS drive is an extra strength bevel gear and pinion back-geared through cut-tooth spur gears to provide sufficient gear ratio for use of standard electric motors with V-belt drives. Other available drives include variable speed drives, where necessary.

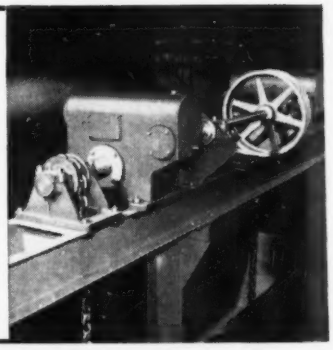


MAIN SHAFT **Standard** seamless steel tubing of proper wall thickness-for-diameter; thoroughly tested for overload stresses to eliminate shaft failures.

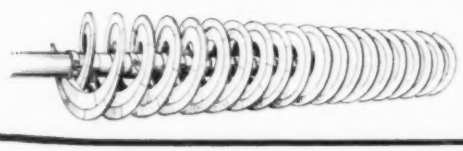


LONGITUDINAL SECTION OF MAIN SHAFT

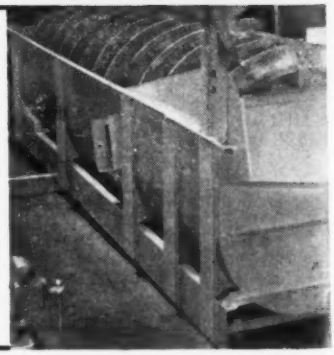
LIFT MECHANISMS
Standard motor driven or hand-operated lifting mechanisms are always recommended, although special designs are provided where required. All feature standard alloy constant-pitch lifting chains and chain pocket sheaves of exclusive AKINS design. There is no possibility of slippage, and sand or slime on the chain cannot affect the operation of the mechanism.



SPIRAL FLIGHTS **Standard** 12° pitch angle flights are formed of heavy steel plate to withstand extreme abrasive action. Points of greatest wear are protected with hard iron wearing shoes which are easy and inexpensive to replace. Flight arms are of cast steel clamped securely about the shaft and give full support and protection against overload to both shaft and flights.



TANK CONSTRUCTION
Standard steel plate is used in the manufacture of all AKINS tanks. All seams and joints are welded, and heavy frame channels and side members are welded to the tank. The entire assembly utilized the tank plate as the web in a large beam—so strong that the entire machine may be mounted on simple piers or on structural members of a steel building without extra substructures.



is a better buy for your Classifier Dollar...

HERE'S WHERE CLASSIFIERS GO

AKINS dominate with 316 Spiral Classifiers in 6 fields

Spiral classification has become standard practice in six major fields, and in every one AKINS machines are considered standard for plant installations. The plants listed below are world famous, many are at the half-century mark. They all have another thing in common: every one is using AKINS Classifiers—316 machines in these six fields.

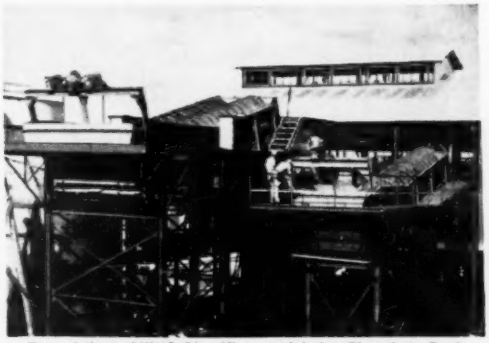
CLOSED CIRCUIT ALL GRAVITY GRINDING 200 MACHINES	Phelps Dodge Corp. Cananea Consolidated Copper Co. Anaconda Copper Mining Co. Climax Molybdenum Co. Golden Cycle Corp. Granby Consolidated Mining, Smelting & Power Co., Ltd. U. S. Vanadium Corp. U. S. Smelting, Refining & Mining Co. New Jersey Zinc Co.
IRON ORE CONCENTRATION 50 MACHINES	Butler Bros. Cleveland-Cliffs Iron Co. Pickands, Mather & Co. Hanna Ore Co. Sheffield Steel Co. Alan Wood Steel Co. Oliver Iron Mining Co.
PHOSPHATE ROCK RECOVERY 16 MACHINES	Swift & Company International Minerals & Chemical Corp. Davison Chemical Corp.
GLASS SAND WASHING 15 MACHINES	Pittsburgh Silica Sand Co. Sun Sand Co. Au Buchon Silica Sand Co. United Clay Mines Corp. Cumberland Cement & Supply Co. Deckers Creek Sand Co.
INDUSTRIAL & COMMERCIAL SAND PREPARATION 10 MACHINES	Industrial Silica Corp. L. G. Everist & Co. New Jersey Pulverizing Co. Reitz & Crites Sand Co.
HEAVY MEDIA CONCENTRATION 25 MACHINES	Butler Bros. Cleveland Cliffs Iron Co. Hanna Ore Co. Barton Mines Corp. H. C. Frick Coke Co. U. S. Coal & Coke Co. American Zinc Co. Stanley Mining Co.

This is only a partial list of important users of AKINS machines. The first AKINS installation was made in the Cripple Creek area of Colorado in 1909. Since then no important installation of AKINS Classifiers has ever been replaced with machines of any other make!

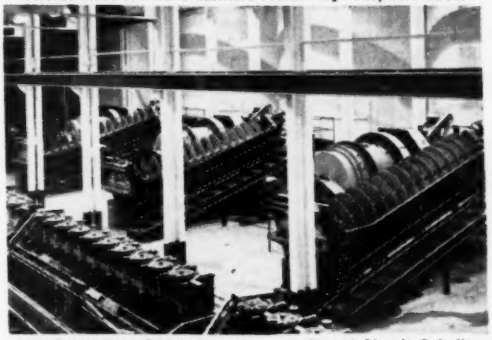
For details and free engineering service on your application write

COLORADO IRON WORKS CO., DENVER 2, COLO.

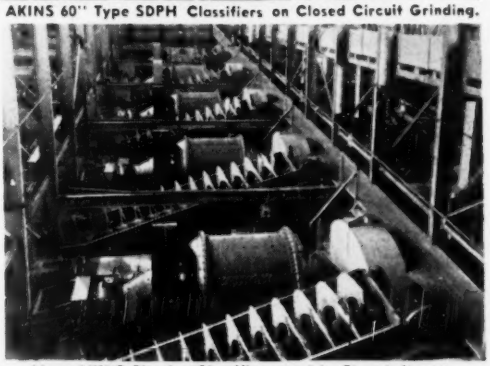
MAIN OFFICE AND WORKS, Denver 2, Colorado, U. S. A., Canadian Locomotive Co., Ltd., Kingston, Ont., Can.; Wright Bros., Credit Foncier Bldg., Vancouver, British Columbia Sales Agents; Head, Wrighton & Co., Ltd., Stockton on Tees, Engl.; John Carruthers & Co., (Pty.) Ltd., Sydney, Aus.; Head, Wrightson & Co., S. A., (Pty.) Ltd., Johannesburg; Edw. J. Nell Co., Manila, P. I.



Two of three AKINS Classifiers reclaiming Phosphate Rock.

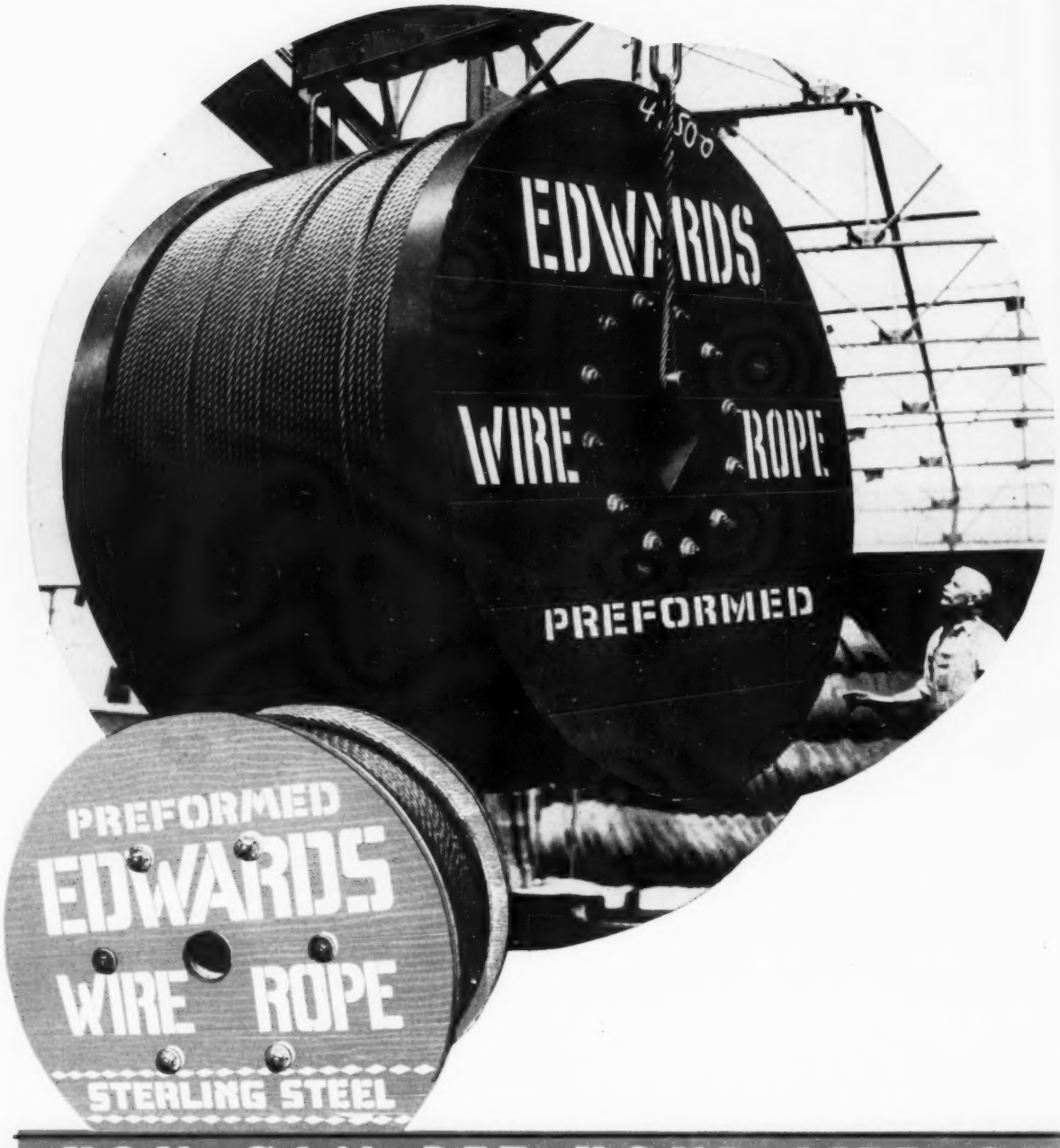


AKINS 60" Type SDPH Classifiers on Closed Circuit Grinding.



More AKINS Simplex Classifiers used in Closed Circuit.

COLORADO IRON WORKS COMPANY



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Saved HUNDREDS OF DOLLARS PER MONTH IN PULVERIZING!

An example of how the AMSCO Hardfacing System can help you fight wear profitably

Here's why the AMSCO HARDFACING SYSTEM can save you money

Hardfacing recommendations are as sound as the manufacturer who makes them. For a half-century, Amsco has specialized in fighting the high cost of wear—first with manganese steel and later with another big weapon . . . AMSCO Hardfacing Rods and Electrodes.

The result is the AMSCO Hardfacing System . . . where a wide range of Amsco Rods are selected for use according to a systematic appraisal of the equipment part and wear factors involved.

Whether your particular problem is one of wear caused by impact, abrasion, heat, corrosion—alone or in combination . . .

Amsco has both the research facilities and the years of on-the-job experience necessary to help you make important reductions in your operating costs.

A large Pennsylvania brick company was faced with this problem: their pulverizer plows wore out every two weeks due to extreme abrasion of clay with a high silica content. An expensive period of down-time and replacement labor resulted.

In trying to stop this high replacement cost, a test was made. Each plow was hardfaced with AMSCO Tungrod—specially developed by Amsco research for high resistance to abrasive wear.

Result? The plows hardfaced with AMSCO Tungrod lasted 4 times as long . . . 3 out of every four replacement jobs were eliminated! The saving amounted to several hundred dollars *each month!*

AMSCO Tungrod permits big savings—through longer service and fewer replacements—on many other applications. If you have an equipment part used in cutting or pulverizing non-metallic materials, the possible savings—*to you*—are too big to be overlooked!

Write today for illustrated hardfacing catalog — and nearest distributor's name.

AMSCO®
WELDING PRODUCTS

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION
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Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que.

Low Cost Concentration

with the

Humphreys Spiral Concentrator

Bridging the gap between Heavy Media and Flotation, the Humphreys Spiral Concentrator provides a low cost method for recovery of values between 1/8" and 200 mesh.

★ *for* **separation of minerals of different specific gravity in ores at sizes generally minus 10 mesh.**

★ *for* **recovery of liberated values too coarse for flotation.**

★ *for* **recovery of other ore values from flotation tailing.**

★ *for* **recovery of values too fine to be economically treated by heavy-media separation.**

★ *for* **cleaning minus ¼ inch bituminous or anthracite coal.**

Low cost of installation
Low operating costs
No moving parts

Concentrating action of Humphreys Spiral— Note wide black band of concentrate entering upper outlet, which is set for a wide cut, also narrow black band of middling entering lower outlet set for thin cut. In cleaning fine coal, phosphate rock and mica, refuse and middling are discharged from the concentrate ports and cleaned product follows the path shown as tailing.

The installation, operation and maintenance costs of Humphreys Spirals are so low that economical concentration of materials, which could not heretofore be worked at a profit, is now possible. There are no moving parts, no vibration, weight per unit of capacity is low and requires only a light foundation. Floor space per ton treated is very small.

HUMPHREYS SPIRALS are widely used in plant operations in the United States and abroad, ranging from 30 tons to 20,000 tons daily capacity, for concentration of fine iron ore; for concentration of chromite, ilmenite, rutile, and zircon from sands; for concentration of ground ores for recovery of lead, zinc, chromite, copper, barite, mica; for concentration of molybdenum flotation mill tailing for recovery of tungsten; for separation of fine phosphate rock from sand; for cleaning minus ¼ inch coal; for concentration of pyrite from flotation mill tailing; for concentration of fine gold and gold bearing minerals.

A testing laboratory is maintained in Denver by the Engineering Division of The Humphreys Investment Company. Results obtainable in a full size plant may be determined by tests of a representative sample of minerals or coal weighing 300-500 pounds.

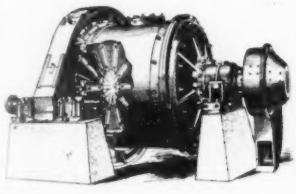
THE HUMPHREYS INVESTMENT COMPANY
ENGINEERING DIVISION
912 First National Bank Building • Denver 2, Colorado

Manufacturing and Sales Agents
SWEDEN: Sala Maskinfabriks A-B, Sala
AUSTRALIA: John Carruthers & Co. Pty. Ltd., Edgecliff, N.S.W
BOLIVIA: Mauricio Hochchild S.A.M.I., La Paz
SOUTH AFRICA: Edward L. Bateman (Pty.) Ltd., Johannesburg

EQUIPMENT TO LOWER YOUR PRODUCTION COSTS

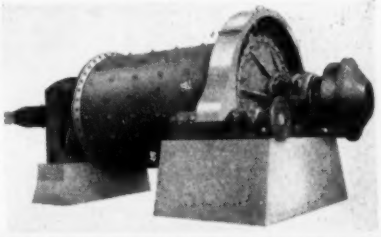
MARCY OPEN-END MILLS

Marcy ball, rod and tube mills have greater grinding capacity than conventional mills, with a lower per-ton cost, because of the Marcy Low Pulp Line. The open-end discharge removes finished sands without wasteful overgrinding, increasing useful grinding capacity with better product uniformity.



Marcy ball mills, in closed circuit grinding, will deliver a product of 200 mesh and finer, or coarser if desired. Available in a variety of drives with capacities ranging from 5 to 2500 tons per day.

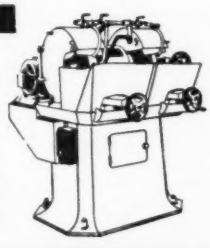
Marcy rod mills will produce a 20-mesh product (or coarser, as desired) in one pass from a 1-inch feed, or finer products when working in closed circuit. Can be furnished in capacities up to 6000 tons of 1-inch feed of average ore reduced to 20-mesh.



Genuine Wilfley Concentrating Tables

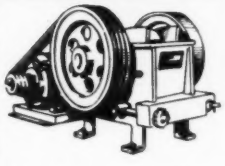
The Wilfley Table will give more exact separation of products, increased recovery, and a greater capacity at a lower cost of operation and upkeep than comparable equipment. It is mechanically operated and consists of a self-oiling, enclosed head motion operating an endwise reciprocating table with a rubber or linoleum covered deck surface properly riffled. The Wilfley Table is capable of dressing any ore or material subject to gravity concentration. Available in a complete range of sizes up to 180 tons capacity per 24 hours.

Massco Rock Bit Grinders



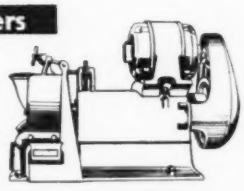
A heavy duty grinder for high efficiency and speed in resharpening all makes of removable rock bits. To safeguard against burning the cutting edge, coolant is applied both above and below the bit. Gauge grinding head is rotatable, for grinding all clearance angles with plain face wheel without dressing for different angles. Other type are available for the smaller operator.

Improved Massco Laboratory Crushers



Most crushers crush faster than they can discharge. This one gets rid of the rock in a hurry. Two blows every revolution mean minimum oversize. Plate wear taken up by front adjustment through convenient hand wheel. Smooth jaws insure better product and easier cleaning. No shims, set-screws or toggles. Welded plate frame; manganese steel jaw and cheek plates; bronze bushed bearings; Lincoln grease fittings. Strong and compact but relatively light.

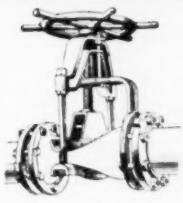
Massco-McCool Pulverizers



The Massco-McCool Pulverizer is a disc-type grinder designed for pulverizing to any mesh, in one operation, virtually any material. Ideal for the assay, metallurgical, chemical and industrial laboratory. The planetary movement of the rotating disc assures long life to the grinding surfaces. This machine will grind to 150 mesh at one pass—and more samples per hour at lower cost. No gears; oil lubricated; 100% anti-friction bearings.

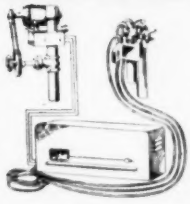
Representatives: Canadian Vickers, Ltd., Montreal;
W. R. Judson, Santiago and Lima;
The Edward J. Nell Co., Manila, P. I.;
The Ore & Chemical Corp., 80 Broad St., New York 4, N. Y.,
Representatives for Continental Europe.

Massco-Grigsby Rubber Pinch Valves



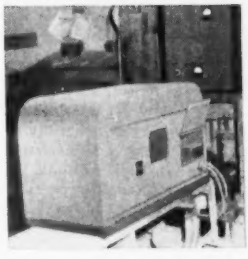
Wherever abrasive or corrosive pulps or liquids must be moved, these valves are finding wide use. Useful in ore milling, cement plants, dredging, and many industrial operations where severe wear makes frequent replacement of metal type valves necessary and costly. With certain modifications, these valves are adaptable in chemical plants for handling highly corrosive solutions, solutions which crystallize at normal temperatures, oily liquids, and fine dry materials. Shuts tight, through patented sleeve design, even on solid particles. No packing glands. Freezing does not deteriorate sleeve. Easy to operate. Sizes—1" and 2" for continuous pressure to 100 lbs., 3", 4", 6", 8", 10" and 12", to 150 lbs. State your application.

Massco-Adams Density Controllers



This pulp density control eliminates both the frequent checking of classifier density and manual regulation of water by the attendant. Water dilution is regulated to maintain percentage of solids within close limits of any predetermined point. Thus, size of finished product is controlled. Results in maximum efficiency in classification and grinding at optimum capacity. In any closed circuit grinding, results depend upon pulp density in the classifier. The Massco-Adams Density Controller regulates density automatically and continuously.

Massco Circuitron Grinding Mill Feed Control



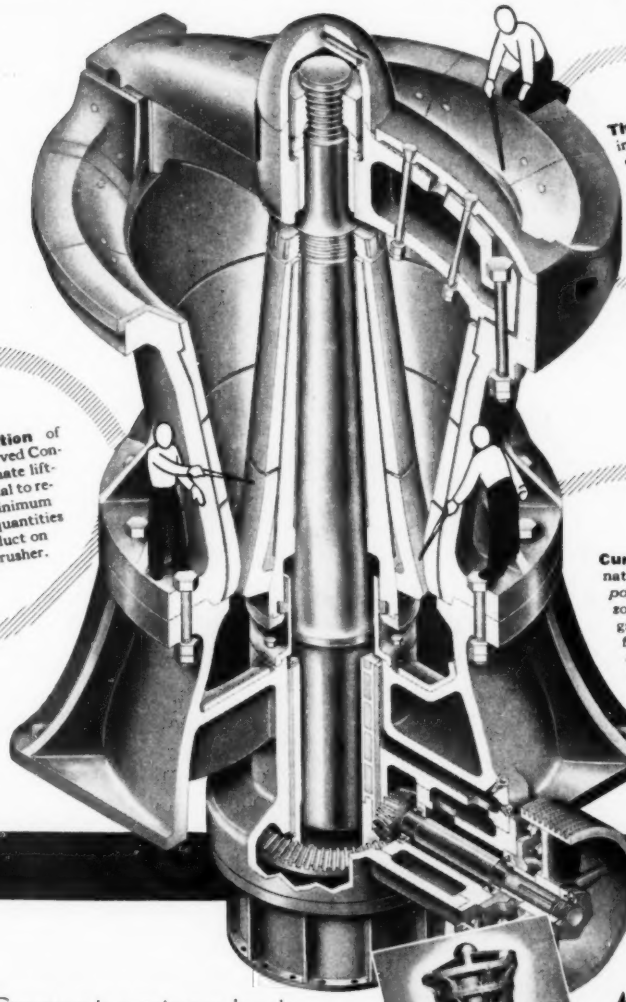
The Circuitron, based upon principles familiar to radio technicians, controls both the flow of feed to the grinding mill and the pulp density in the classifier (see Massco-Adams Density Controllers). Provides a means of optimum operation in closed circuit grinding. The delicate but rugged mechanism senses the changes in feed character to the grinding mill. At the same time it measures pulp density in the classifier and adjusts the raw feed into the circuit automatically for best results. This in turn helps eliminate surges to the following metallurgy, so that adjustments can be made at leisure. Metallurgy is improved and mechanical efficiency stepped up by use of the Circuitron.

BRANCH OFFICES
El Paso **Salt Lake City**
1775 Broadway, New York, N. Y.

THE MINE AND SMELTER SUPPLY COMPANY

DENVER, COLORADO

Here's why a Traylor TC Gyratory Produces so much at so little cost



The wide angle of the feed opening will team up with your heaviest equipment to permit reduction of the largest rocks with a minimum of preliminary breaking.

By the efficient application of crushing force, Traylor's Curved Concaves and Bell Head eliminate lifting and churning of material to reduce waste fines to a minimum . . . . . produce greater quantities of uniform cubical product on the first pass thru the crusher.

Curved Crushing surfaces eliminate choking and packing . . . *and power waste.* Each succeeding zone in the crushing chamber has greater capacity than the one before it. Steady, dependable production without interruption is the result.

The Traylor TC Gyratory is a primary breaker of great efficiency and huge capacities. Its overall sturdiness of design provides adequate mass for shock absorption. It's a big crusher built to do a big job. Any plant of 10,000 tons daily capacity or over will operate at greater efficiency with a Traylor TC Gyratory. Free bulletin gives complete details . . . sizes . . . capacities. Mail coupon for your copy today.

Mail Coupon for Full Information

TRAYLOR ENGINEERING & MANUFACTURING CO.
417 MILL ST., ALLENTOWN, PA.

Give me the details on a Traylor TY Gyratory Crusher . . . especially on its economical operation.

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*Company*_____

*Address*_____

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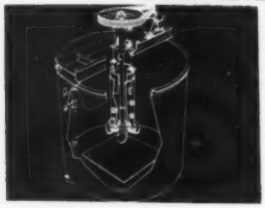
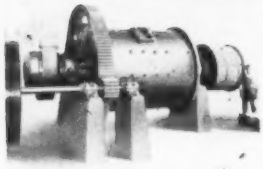
DENVER EQUIPMENT - - SERVING SPECIAL REQUIREMENTS - - THE WORLD OVER

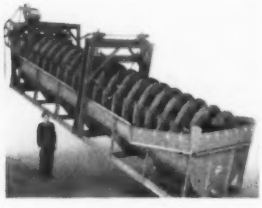
"COMPLETE SERVICE AND EQUIPMENT FROM TESTING TO FEEDER TO DRYER"



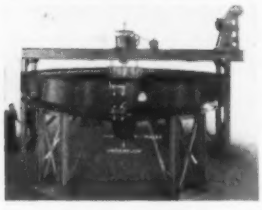
DENVER SUPER AGITATOR . . . for mixing, blending, agitating and conditioning. Thorough mixing of every particle (without short circuiting) is assured with feed directly into center standpipe to agitation zone. Write for Bulletin A2-B2.



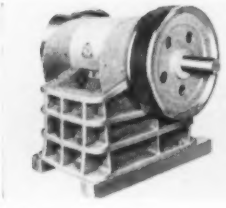
DENVER STEEL-HEAD BALL MILL . . . It's the steel head that makes the difference because of the non-breaking quality. Ball-rod-tube mills available with variety of discharge including peripheral. Get Bulletin B2-B4.



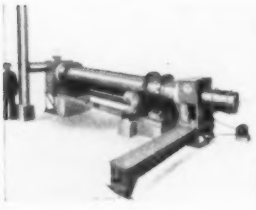
DENVER CROSS-FLOW CLASSIFIER . . . There are no submerged bearings in this classifier. The cross-flow principle of pulp movement creates a quieter pool resulting in cleaner separation of sands and slime. Bulletin C5C-B shows sizes, capacities, features.



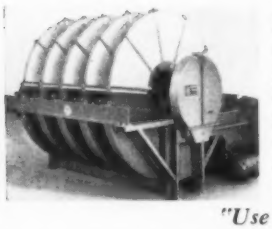
DENVER HYDROCLASSIFIER . . . for accurate slime separation from minus 100 mesh to colloidal. Feed is through a center feed well. Solids settle quickly without disturbing quiet pool. Slimes and fines move radially to overflow rim of tank. Get Bulletin C4A-B for complete details.



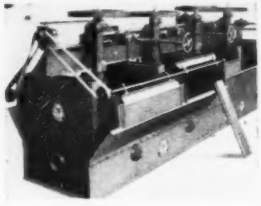
DENVER JAW CRUSHER . . . Rugged construction provides continuous, heavy duty operation. Forced feed type gives maximum capacity. Jaw and cheek plates of manganese steel are reversible. Demountable mule-back types are available for ease in transportation. Bulletin C12-B5.



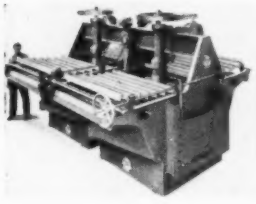
DENVER DRYERS . . . for reducing moisture content in mineral concentrates, coal fines, food wastes, industrial by-products and waste products. Sizes range from 2'x15' to 12'x250'. Types available include: direct heat, indirect heat and steam. Write for Bulletin D4-B1.



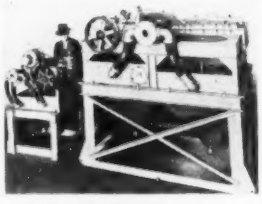
DENVER DISC FILTER . . . gives a drier filter cake because of the patented filter segments which give more positive drainage of filtrate. Segments are easily changed. Tanks can be divided to filter more than one product in only one machine. Get Bulletin F9-B2.



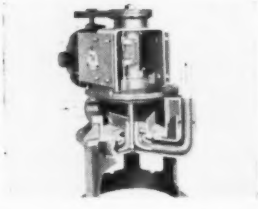
STANDARD "SUB-A" FLOTATION . . . Conditioning, cleaning and recleaning can all be accomplished in a single bank of Denver "Sub-A" Flotation Cells without resorting to pumps or elevators. Complete details in Bulletin F10-B50.



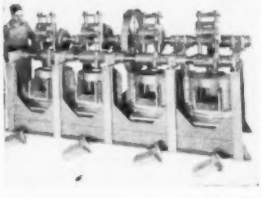
LASSETER "SUB-A" FLOTATION . . . A special Denver machine for coal flotation designed with rakes to remove and partially dewater the thick, dense, low-ash content coal floated to the surface. Other special machines also available. Bulletin F10-B50 for complete Flotation information.



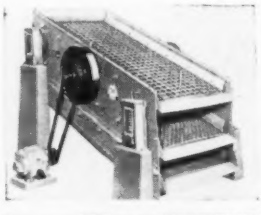
DENVER SELECTIVE MINERAL JIG . . . An efficient selective pulsator and concentrating machine which will handle an unclassified feed and separate solids having only a slight differential in settling rates. Write for Bulletin J2-B.



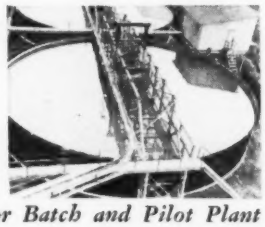
VERTICAL CENTRIFUGAL PUMP . . . Downward flow of feed directly onto runner permits handling any coarse (up to ¼") or frothy material that will flow by gravity. No feed box is required as fluctuations in feed are taken care of by the pump bowl. Bulletin P10-B.



DIAPHRAGM PUMPS . . . "Adjust this pump while it runs" to regulate and control flow of heavy pulp or sludge. Rubber valves and valve seats are easily replaced. Sizes up to 6" quad-ruplex. Complete details in Bulletin P8-B7. Send for free copy.



DENVER-DILLON SCREENS . . . There is less undersize in any screened product because of the circle motion of this screen. Material is lifted up, back and down hundreds of times. The undersize goes through, not just across. Get Bulletin S3-B5.



DENVER SPIRAL RAKE THICKENERS . . . Patented spiral rakes will usually move settled particles from periphery to center discharge in one revoution. Completely enclosed worm gear and pinion operate in a bath of oil. Low-head superstructure consumes a minimum of space. Bulletin T5-B4.

"Use Denver Ore Testing Service for Batch and Pilot Plant Testing"

DENVER EQUIPMENT 24 HOUR SERVICE COMPANY

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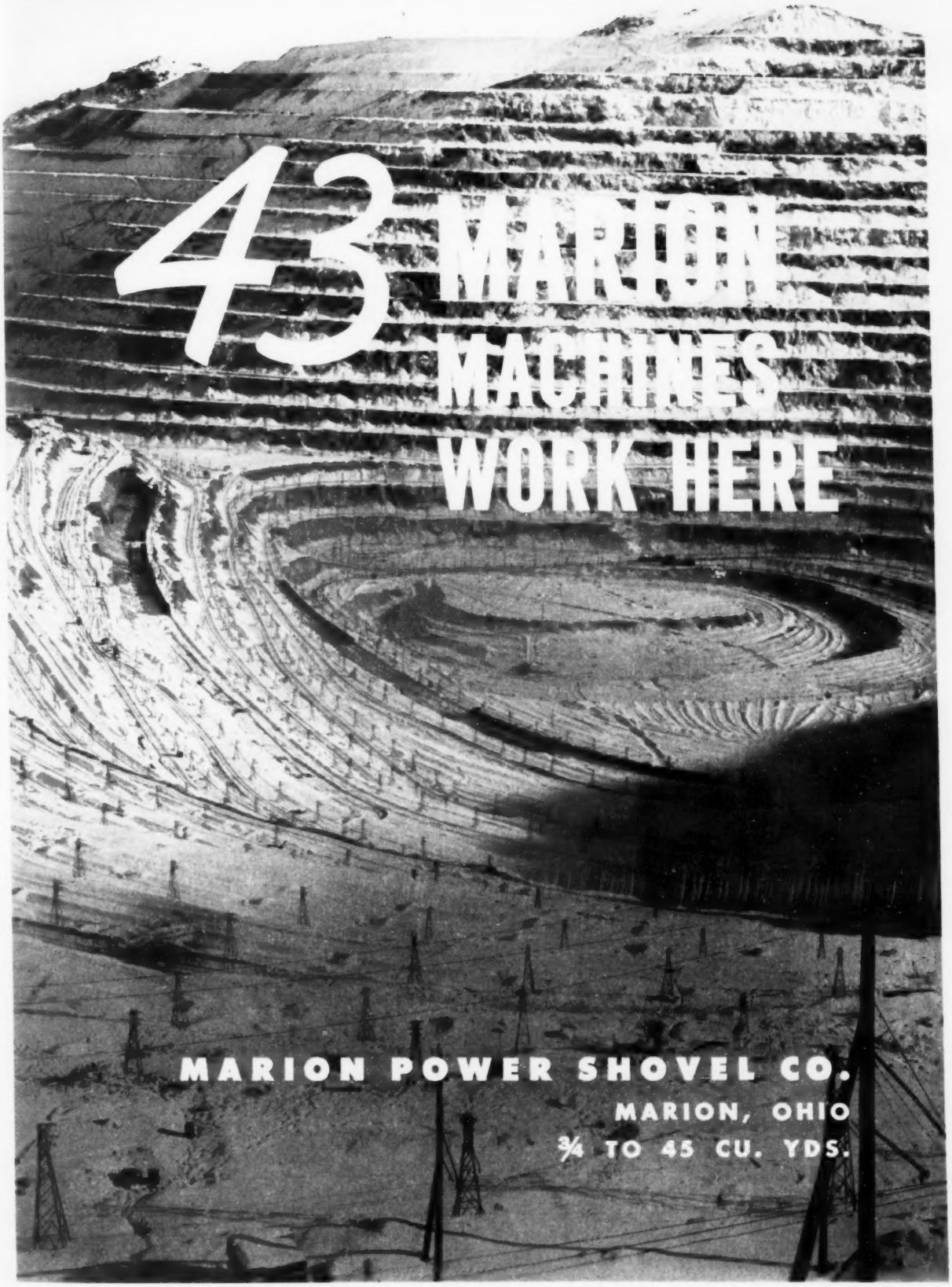

43 MARION MACHINES WORK HERE
MARION POWER SHOVEL CO.
MARION, OHIO
¾ TO 45 CU. YDS.

D TOURNAROCKER delivers 5

STOCKPILES CLAY at Ohio Cement Plant

Lake County Excavators, Inc. are hauling a special blue clay used in the manufacture of cement. Material is removed from bluffs by shovel . . . then hauled 2 miles over a main highway, in and out of traffic to the cement plant, where it is backed into a restricted doorway. About 480 tons are needed every day . . . and a high-speed D Tournarocker delivers over 80% of it.

At the pit, the "D" is loaded in 3 minutes by a ¾-yd. stripping shovel. Contractor has added sideboards, to increase Tournarocker capacity for oversize loads. Scale tickets taken on every load show an average load of over 12½ tons. Despite this weight the 122 h.p. rig easily pulls up 300' of 12% grade out of the pit . . . and highballs safely over the winding, well-traveled highway to and from the mill at speeds up to 28 m.p.h.

Completes 4-mile cycle in 15 minutes

When haul road traffic isn't too congested and railroad crossings are clear, the LeTourneau wagon makes 4 trips every hour. Even with the overload, the Tournarocker travels to the plant at 17 m.p.h., and returns to the pit empty in excess of 25 m.p.h. Occasional rush-hour traffic delays along the 4-mi. cycle sometimes cut hourly output to 3 loads. Under normal conditions, however, the high-speed "D" averages 400 tons per 8-hour day . . . while a 3-ton dump truck, also working full-time on the same cycle, hauls only 80 tons daily.

The mobile Rocker showed its exceptional speed and maneuverability even before being put on the job . . . driving 30 miles through very heavy traffic in 70 minutes . . . an average of over 25 m.p.h.

Offers important savings for YOU

Like Lake County Excavators, it will pay you to investigate the big tonnages and new low-hauling costs possible on your work with these revolutionary rear-dump rigs. Remember, too, with every size Tournarocker — 9, 16, 35 or 50 tons — you get money-saving interchangeability with Carryall Scrapers, bottom-dump haulers, cranes, and flatbeds. This assures you of greater operating flexibility and steady earnings the year 'round. Your LeTourneau Distributor has all the facts — why not call him or write for more information . . . NOW.

Mail today to: **R. G. LeTOURNEAU, INC., Peoria, Illinois**

Please send us specifications, prices and performance data on ☐ 9 ☐ 16 ☐ 35 ☐ 50-ton Tournarockers

NAME.....TITLE.....

COMPANY.....DEPT. OR DIV.....

STREET.....

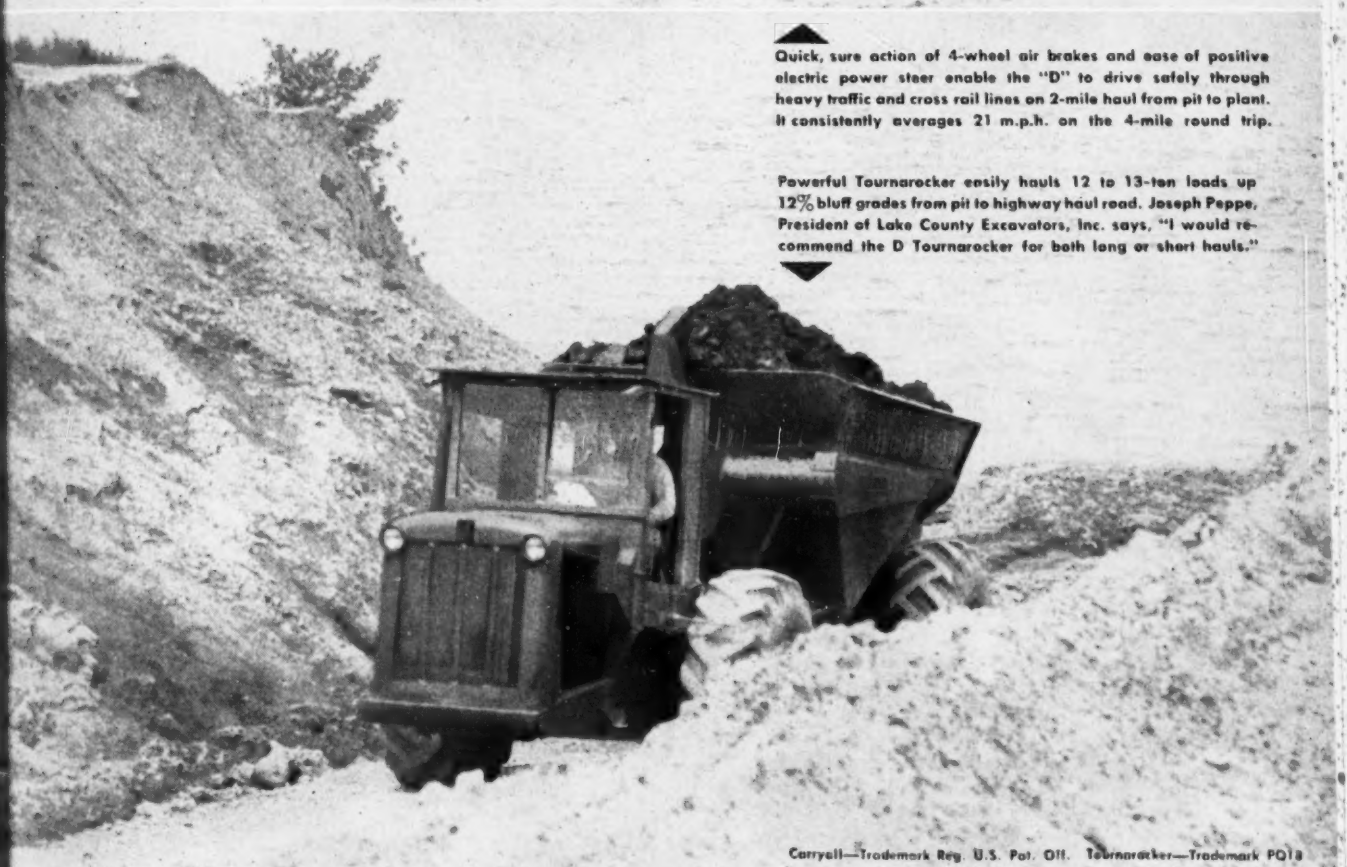
CITY.....STATE.....

Type of work.....

50 tons hourly on 2-mile haul

Quick, sure action of 4-wheel air brakes and ease of positive electric power steer enable the "D" to drive safely through heavy traffic and cross rail lines on 2-mile haul from pit to plant. It consistently averages 21 m.p.h. on the 4-mile round trip.

Powerful Tournarocker easily hauls 12 to 13-ton loads up 12% bluff grades from pit to highway haul road. Joseph Peppe, President of Lake County Excavators, Inc. says, "I would recommend the D Tournarocker for both long or short hauls."



Carryall—Trademark Reg. U.S. Pat. Off. Tournarocker—Trademark PQ18

LETOURNEAU PEORIA, ILLINOIS **TOURNAROCKERS**

HIGH SPEED on RUBBER PLUS TRACTION ADVANTAGES of a CRAWLER

MINING WORLD

and the export edition

WORLD MINING

A Miller Freeman Publication

Published monthly except in April when publication is semi-monthly

APRIL 15, 1951

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VOL. 13 NO. 5

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AN ACCOUNTING OF WORLD MINING FOR 1950

By Charles Will Wright and John Beaupre Dorsh

Consultant on Foreign Mines
Member AIME

Engineer of Mines
Member AIME

FORWARD

The war in Korea has focused attention once more on the fact that many minerals and the men who aid in their development and extraction are in extraordinary demand. Our hitherto "inexhaustible" Gulf of Mexico sulphur reserves suddenly were prorated to consumers by the producing companies, and since the middle of 1950 most sizeable sulphur and pyrite deposits in North and South America have attracted attention.

Since it has become public knowledge that tungsten was essential in the manufacture of tungsten-carbide, armor-piercing projectile points, the price of the metal has shot up to over $70 per long ton unit of contained WO_3.

Similar situations have been recorded in several other mineral commodities, many of which have been earmarked for allocation to industry or have had export controls strengthened. Among these are copper, lead, zinc, aluminum, nickel, cobalt, columbium, cadmium, and sulphur as well as steel and steel alloys.

As brought out in previous "Accountings," the United States' dependence upon mineral imports from foreign countries continues to grow. During 1950 industrial demands for mineral commodities reached unprecedented heights and the United States was caught short-handed. We are dependent almost entirely upon foreign sources for our requirements of tin, nickel, manganese, chromite, mercury, and many nonmetallic minerals, among which are industrial diamonds, quartz crystals, sheet mica, asbestos, and graphite.

We have poured substantial quantities of our mineral resources into foreign aid, largely as raw mineral products or in the form of manufactured goods, which products are the mainspring of our national well-being and power. Our attempts to obtain repayment from the foreign countries receiving this aid in strategic or critical minerals has been discouraging and has amounted to only a small fraction of the quantities shipped overseas. We may continue to give financial and technical aid to our foreign friends to aid their mineral production, but we cannot afford to pursue a course of depleting our resources without endangering our own future.

During 1950 Russia made further inroads into available sources of mineral supply and practically all of China, with its antimony, tungsten and tin mines, now stands subjugated by the Reds. Manganese shipments from Russia were reduced to a trickle and, with the uneasy peace, danger of cutting supply lines from the Eastern Hemisphere becomes more threatening. Also, it should be recalled that during the last war shipping from South America was so jeopardized by submarine warfare that at one time imports all but ceased. In the event of World War III submarines may be a more serious handicap than in World War II.

The expansionist policy of the Soviet Union has increased its grip on sources of mineral supply within the countries on the periphery of Soviet influence. Recently Russia announced another five-year plan, which indicates a further step-up in mineral production. With the mineral resources available from satellites and neighboring countries Russia soon will be far less dependent upon foreign sources of certain minerals than the

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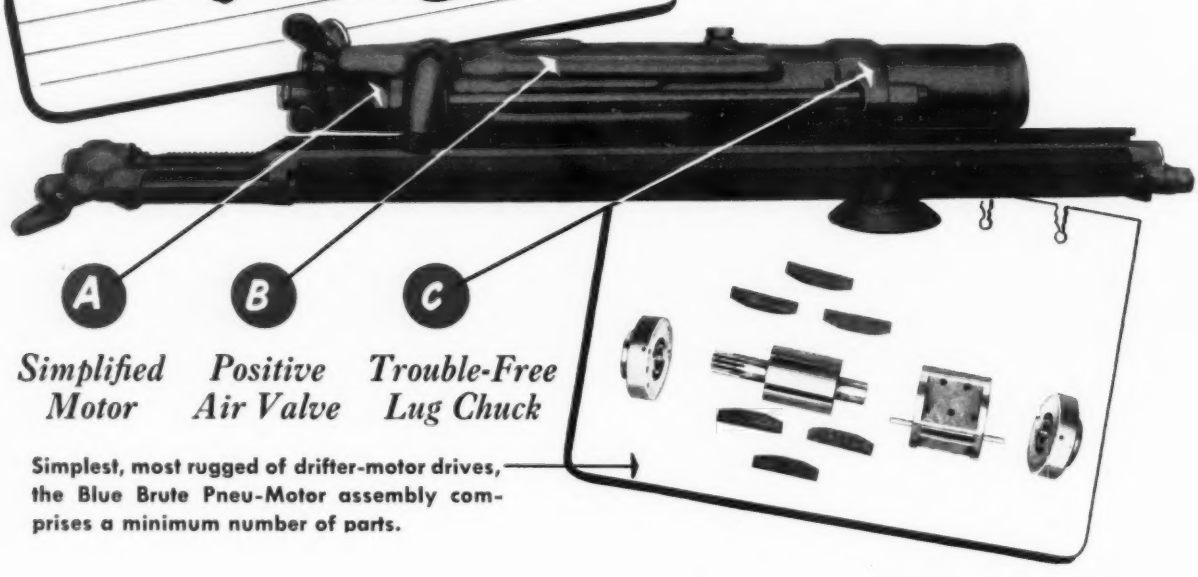

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Percentage of Certain Primary Metals Imported to Meet Consumption Requirements for the Years 1941 to 1945, 1948, 1949 and 1950

Metal	1941 to 1945	1948	1949	1950
Antimony	87	70	87	85
Aluminum	19	12	13	21
Bauxite	22	62	65	65
Beryllium Ore	92	95	95	95
Chromite	93	99	100	100
Copper*	44	38	40	43
Ilmenite	40	40	45	31
Lead*	46	43	42	39
Mercury	46	75	90	94
Manganese Ore	89	89	90	90
Nickel	99	99	99	99
Rutile	68	55	20	30
Strontium Ore	65	99	99	99
Tantalum Ore	99	100	100	100
Tin*	99	99	100	99
Tungsten	62	53	63	39
Zinc*	40	33	41	39

* Contained in metal and concentrates.

United States. As all of these territories are contiguous to continental Russia no danger exists of jeopardizing supply lines by submarine warfare.

Comparing the strategic mineral supply position of the Soviet Union with that of the United States it is apparent that the former is growing steadily stronger while the United States is losing ground in its endeavor to satisfy demands for national defense and industrial development.

Nevertheless, North America produces five times the tonnage of steel, nearly 10 times as much crude petroleum and from four to eight times the tonnage of base metals, and besides has a greater industrial capacity to turn these commodities into war potential than Russia and her satellites. But regardless of our present position every effort must be made to strengthen our access to foreign sources and to encourage greater production from domestic mines by providing greater incentives to exploration and development.

Since our nearest sources of supply for many of these mineral deficiencies are Mexico and Canada it seems obvious that we should take a special interest in the mineral developments in these two countries, Mexico in particular. Currently, it becomes necessary again to approach the Latin American coun-

Percentage of Certain Nonmetallics Imported to Meet Consumption Requirements for the Years 1941 to 1945, 1948, 1949 and 1950

Nonmetallic	1941 to 1945	1948	1949	1950
Asbestos	97	97	96	96
Corundum	100	100	100	100
Fluorspar	9	24	36	37
Graphite	83	92	90	88
Industrial Diamonds	100	100	100	100
Mica (sheet)	87	97	97	97
Quartz Crystals	99	99	99	100
Pyrite	26	12	10	15

tries in an attempt to augment our supplies of certain metals, such as manganese, chrome, nickel, cobalt, tin, and tungsten, as well as the base metals and the minor metals. Among the nonmetallic minerals are industrial diamonds, mica and quartz crystals. Both the large and small mines in Chile and Peru added largely to our base metals supply during the last war. Brazil, Bolivia, Mexico, and Cuba contributed a large percentage of our requirements of other strategic minerals largely due to price incentive during World War II and they are ready to do so again.

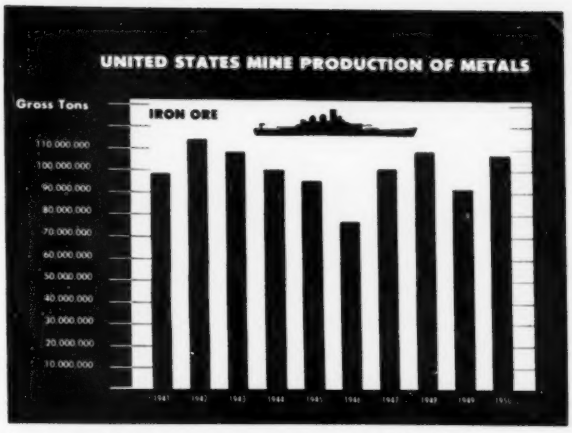
IRON ORE

Nearly 80,000,000 gross tons of iron ore was mined and shipped from the Lake Superior district during 1950. The North Eastern magnetite district produced over 4,800,000 gross tons, the South Eastern states an estimated 8,000,000 gross tons, and the Western states 5,400,000 gross tons. A grand total of 98,200,000 gross tons was shipped from domestic iron mines.

The recent discovery of a westward extension of the Cuyuna Range in western Minnesota is believed to be important and when developed may add largely to domestic iron ore reserves.

The United States steel industry plans to expand its annual capacity to a total of approximately 110,000,000 net tons by the end of 1952, an increase of about 9,500,000 net tons over July 1, 1950. Planned expansion of this sort must be supported by similar extension of mining capacity, ore transport facilities, and the production of ferroalloys.

Brazil's large iron ore reserves continue to lie dormant, as transportation costs over the narrow gauge railway and high ocean freight rates preclude large-scale shipments. At the present time the only ore transported to the United States or England is being taken as ballast on return cargoes. The Conakry iron ore deposits in West Africa, south of Dakar, continued under development during the year. This deposit is a



laterite and has an estimated reserve of 1,000,000,000 tons of ore averaging 52 percent iron. Rehabilitation of the Sydvaranger taconite mines in Norway continued. The reduction plant at this site was completely destroyed by the Germans before evacuation in 1944. Cost of the rehabilitation is estimated at $29,000,000 of which about $5,000,000 is earmarked for purchase of mining, milling, and power machinery equipment from the United States. All concentrates will be produced for export.

By 1960 plans call for the production of 13,500,000 gross tons of taconite concentrates, 10,000,000 gross tons of iron ore from Quebec-Labrador, 1,000,000 gross tons from Liberia, and 16,000,000 gross tons from Venezuela. Domestic mines should provide about 85,000,000 gross tons and the total ore and taconite concentrate to be consumed is estimated at about 130,000,000 gross tons. The Lake Superior district should provide about 67,000,000 gross tons and other United States districts 17,000,000 gross tons. By 1970 Lake Superior production may decline to around 34,000,000 gross tons, other United States districts will provide in the neighborhood of 20,000,000 gross tons while taconite concentrate output may rise to an estimated 25,000,000 gross tons. Estimates indicate that by 1970 imports of foreign ore will amount to approximately 39,000,000 gross tons. Of this tonnage, 20,000,000 will originate in Quebec-Labrador, 16,000,000 in Venezuela, 1,000,000 in Liberia, 1,000,000 in Sweden, and 1,000,000 tons in other countries. The Canadian Steep Rock district also may contribute substantial amounts to the supply.

FERROALLOYS

MANGANESE ORE—Little change in domestic production of manganese ore occurred in 1950, as compared with 1949, namely 115,000 short tons* of which 97 percent was from Montana. Ferruginous manganese ore output, however, rose sharply to an estimated total of 720,000 short tons, largely mined from the Cuyuna Range which accounted for 90 percent.

Imports of manganese ore during 1950 are estimated at 1,800,000 tons, of which India supplied 34 percent, the Union of South Africa 27 percent, Gold Coast 17 percent, Brazil eight percent, Cuba five percent, and the U.S.S.R. only three percent. In view of the almost complete embargo on exports from U.S.S.R., formerly our main source of supply, this record of imports is outstanding. The lack of transportation facilities, principally freight cars in India and the Union of South Africa, and the severely congested shipping port of Takoradi on the Gold Coast, were the main handicaps in preventing greater imports. The 1950 consumption of manganese ore is estimated at 1,600,000 short tons.

In the United States exploration for manganese is being conducted in Aroostook County, Maine, at Artillery Peak, Arizona, and at Batesville, Georgia, by the U. S. Bureau of Mines. In California investigations of low-grade manganese deposits are in progress by private companies. Outstanding in the foreign field, is the development of the manganese deposits in the Amapa Territory, Brazil, and the explorations now in progress in South West Africa.

CHROMITE—Domestic production of chromite for 1950 is estimated at 700 tons, all of which came from California, and the high-grade ore reserves will not permit much expansion in output. Industry in the United States thus is dependent upon imports for practically all chromite requirements. In 1950 total imports were about the same as in 1949, namely 1,250,000 tons, the Union of South Africa contributing 30 percent, Turkey 19 percent, the Philippines 16 percent, Southern Rhodesia 14

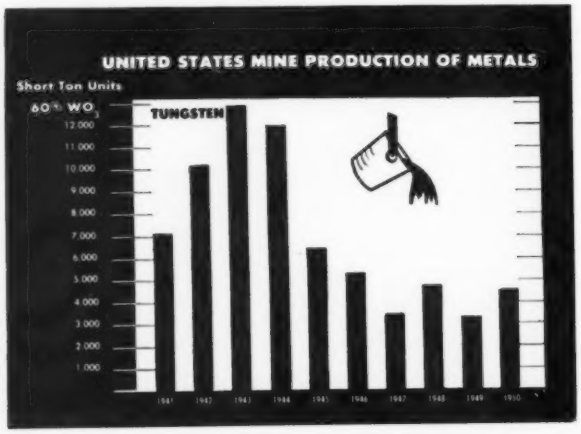
* Short tons are used unless otherwise specified.

percent, Cuba seven percent, and the U.S.S.R. and New Caledonia each five percent. Consumption of all grades increased from about 650,000 tons in 1949 to an estimated 960,000 tons in 1950, the greatest increase being in metallurgical grade.

NICKEL AND COBALT—We are dependent upon Canada for practically all of our nickel requirements and upon Belgian Congo for most of our cobalt. Increased military uses caused an acute shortage of these metals in 1950, and beginning January 1, 1951, nonmilitary uses have been reduced greatly. Because of this shortage the Government-owned plant at Nicaro, Cuba, with an annual capacity of 32,000,000 pounds of nickel-oxide, is being reactivated. Also the enlargement of the Falconbridge Nickel Mines Ltd's. Kristiansand refinery in Norway to produce 30,000,000 pounds annually should be completed in 1951.

The growing demand for cobalt, particularly for jet planes, has placed allocation of this metal under strict government control. In Canada revival of the famous silver camp at Cobalt, Ontario, is well underway, and local refinery capacities are being increased. A new cobalt refinery is under construction in Garfield, Utah, by the Howe Sound Company to treat the concentrates from the Blackbird mine in Idaho. Also, interest is being taken in the recovery of cobalt from the smelter slags of the Belgian Congo. These slag piles have been accumulating for several decades. An electrolytic plant for extracting cobalt from flotation concentrates of the Rhokana Corporation will be completed soon at Nkana, Northern Rhodesia.

TUNGSTEN—Domestic production of tungsten concentrates in 1950 is estimated at 4,200 short tons (60% WO_3), a 38 percent increase over 1949. The Nevada-Massachusetts Company, in Nevada, the Tungsten Mining Corporation, in North Carolina, the Climax Molybdenum Company, in Colorado, and the U. S. Vanadium Company in California, accounted for nearly 90 percent of this total. The increased demand for tungsten-carbide and other alloys with the loss of imports from China



and Korea, primarily our main supply sources, has resulted in a rapid price advance from $18 per long ton unit of contained WO_3 in January, 1950, to over $73 early in 1951. This price incentive already has started greater activity in the development of tungsten deposits in the United States and in increasing output from the mines in Latin American countries.

Domestic consumption is estimated at 6,000 tons while imports during 1950 are estimated at about 13,000 tons, Korea supplying nearly 40 percent, Bolivia, Brazil, and Peru, a total of about 30 percent, and the balance from China, Siam, and Australia.

NONFERROUS METALS

During the prewar period, 1935 to 1939, United States production of the base metals—copper, lead and zinc—was sufficient to supply industrial demands. The copper mining industry at present is operating at capacity and under the incentive of rising market prices the lead and zinc production for 1950 showed a slight increase.

Industry's demands for these metals, however, are increasing much faster than domestic production and we cannot count on much greater imports than the amounts we have been receiving for the past few years.

In the United States and the United Kingdom attention is centered now on government controls of these nonferrous metals. Consumption restrictions, however, will be progressive so as not to cause the industrial economy to suffer unduly and it will take time to finalize such controls. Restrictions also are to be applied to the other nonferrous metals which include tin, antimony, cadmium, mercury, bismuth, aluminum, and magnesium. The extent to which we depend upon imports of these metals is shown in the accompanying table. Luckily, important quantities of these metals are obtainable in Canada and Mexico and it is to these areas that attention should be focused.

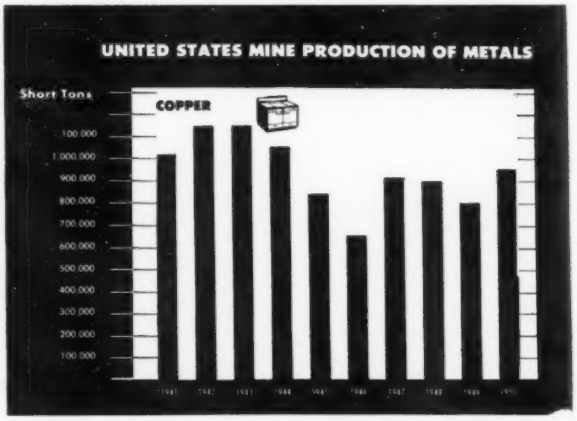
ALUMINUM—Production of bauxite in the United States increased from 1,149,000 long tons in 1949 to approximately 1,350,000 long tons during 1950. As in previous years, by far the largest percentage originated in Arkansas, this year over 97 percent, and the remainder in Georgia and Alabama. Imports were nearly 2,500,000 long tons or about 65 percent of the total supply. Surinam shipped 925,000 long tons, Indonesia 445,000 long tons, British Guiana 90,000 long tons, and 15,000 originated from other sources. Production of primary aluminum ingots in the United States reached about 719,000 short tons during 1950. The war in Korea stimulated activity during the year and December production was at the rate of 780,000 tons yearly. Supplementing the primary output was secondary production from scrap, partly imported and estimated at 250,000 short tons, a gain of 38 percent over 1949. Net imports of ingot from Canada, Japan, and Europe reached about 190,000 tons. Total ingot supply was about 1,160,000 tons, the greatest in history and an increase of about 290,000 tons over the 1949 total. Interest in production of aluminum throughout the world was stimulated by improved industrial and economic conditions and depletion of war scrap reserves.

Production in Western Germany, Austria, France, Italy, and India is limited by power shortages. However, total production for 1950 substantially exceeded 1949. New plants under construction in Norway, Sweden, Brazil, Jamaica, and the Antipodes, will add to world supply in 1951 and later years.

In contrast with the exceptional price rises in most of all of the metals, the minor rise in that of aluminum during 1950 from 17 to 19 cents a pound contributed largely to the extraordinary demand for the metal.

ANTIMONY—Antimony produced domestically is largely from the Yellow Pine mine of the Bradley Mining Company in Idaho. This mine accounts for nearly 90 percent of domestic production. The balance is from small mines in Nevada and California. Imports from China, our principal source, dropped from 5,800 tons in 1947 to 313 tons in 1949. This loss has been replaced by increased imports from Bolivia, Mexico, and Peru. Total imports in 1950 were about 15,000 tons of metal contained in ores and as regulus. The recovery of secondary antimony is estimated at 17,000 short tons in 1950.

COPPER—Mine production of recoverable copper in the United States rose to 907,000 tons in 1950, an increase of 20 percent over 1949. Arizona supplied 401,000 tons, Utah 279,000 tons, New Mexico 66,000 tons, and Montana 54,000 tons. Copper consumption in 1950 was 1,475,000 tons, foreign mines supplying about 687,000 tons of the copper imports. The principal sources of imports continue to be Chile, with Canada ranking second and Peru third. The world output for 1950 is estimated at 2,670,000 short tons, eight percent above that of 1949. The United States is credited with an output of 907,000 tons in 1950; Canada 275,000 tons; South America 440,000; and Africa with 550,000 tons. Among the outstanding developments in the domestic field are (1) the White Pine deposit of the Copper Range Company in Northern Michigan where the ore reserves are estimated now to be 100,000,000 tons of proved ore and 300,000,000 tons of probable ore, averaging about 24 pounds of copper per ton; (2) the San Manuel deposit of the Magma Copper Company with ore reserves estimated to be 600,000,000



tons of developed and probable ore, averaging 17 pounds of copper per ton, and (3) the Greater Butte project of the Anaconda Copper Mining Company where an estimated 150,000,000 tons of ore has been developed containing 20 pounds of recoverable copper per ton. Production from these deposits will start probably in from one-and-a-half to three years.

In the foreign field, the Chuquicamata mine project of the Chile Copper Company is by far the most important. Here preparations are being pushed ahead to mine the underground sulphide orebody below the mile-wide openpit currently producing oxide ores. Construction of the concentrator plant and smelter additions are progressing satisfactorily. The ore reserves in this deposit are estimated at over a billion tons averaging over 2.0 percent copper. In Canada the Noranda Mines Limited carried out work designed to bring its Gaspe deposit into production at the rate of 15,000 tons of copper yearly by 1953.

In Africa copper production again was hampered by inadequate railway facilities. Although final figures are not available, it is known that Africa outranked South America as a copper producer in 1950 with a total of about 550,000 tons for the year. Approximately 96 percent of the total copper is smelted in Africa. The four principal companies in Northern Rhodesia in order of output are: Rhokana Corporation, Mufulira Copper Mines, Ltd., Roan Antelope Mines Ltd. and Nchanga Copper Mines, Ltd. All mines currently operating in the Belgian Congo belong to Union Miniere du Haut Katanga which operates a smelter and produces electrolytic copper. In the Union of South Africa the two principal producers, O'okiep Copper Company, Ltd. and Messina (Transvaal) Development Company, operated at capacity. Rhodesia Copper Refineries, Ltd. plans to increase the capacity of its electrolytic refinery at Nkana from 65,000 to 124,000 tons yearly to treat the output of the Rhokana and Nchanga mines.

Latin America supplied about 80 percent of the United States' imports of copper in 1950. Chile is the largest producer in South America and supplies over 20 percent of the world's output. Chile Exploration Company, an Anaconda subsidiary at Chuquicamata, eventually will have an output of 250,000 tons of copper yearly. The Braden Copper Company has a potential copper production of 150,000 tons a year and may increase this to 175,000 tons per year. The Andes Copper Company is capable of producing 100,000 tons a year.

Peru produces about one percent of the world's copper and supplies the United States with approximately four percent of our imports. The most important copper producer in Peru is Cerro de Pasco Copper Corporation which supplies about 30,000 tons of metal yearly in a completely integrated plant, one half originating in company-controlled mines and one half from tributary mines. Two new potential properties on which exploratory drilling began in 1948 are the American Smelting and Refining Company's subsidiary Northern Peru Mining Company's Quellaveco and Toquepala deposits. When developed, both properties will be mined by open cut or block caving methods with extraction running at the possible rate of 10,000 tons per day, thus establishing a potential of 45,000 tons of copper yearly. Full production may not be obtained until 1955.

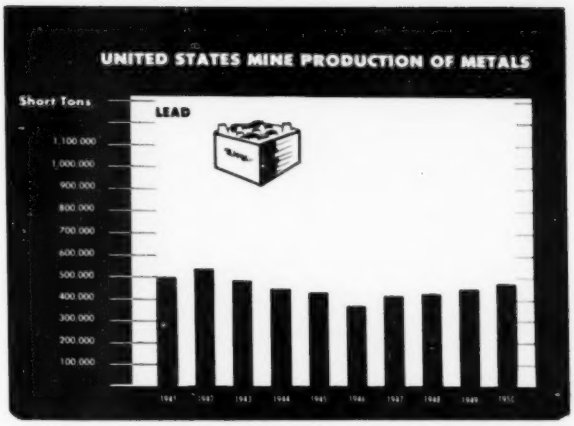
Copper production in the Near and Middle East is restricted to three countries—Cyprus, Turkey, and India. Cyprus is expected to produce about 25,000 tons per year, Turkey about 10,000 tons, and India 6,000 tons. Cyprus and Turkey have exportable surpluses.

LEAD—The lead output from mines in the United States rose from 410,000 short tons in 1949 to 430,000 tons in 1950. The production of secondary lead in 1950 is estimated at 365,000 tons. Imports including ores and scrap were about 520,000 short tons giving a total available supply of over 1,300,000 short tons. Consumption was estimated at 1,200,000 or about 340,000 tons above 1949. This consumption estimate does not include stockpiling.

In 1950 the State of Missouri contributed about 20 percent of the total, followed by Idaho with 18 percent, Arizona eight percent, and Colorado seven percent. Missouri showed a gain of 23,000 tons, Idaho 7,200, while Utah, the third largest producer, showed a loss of 10,000 tons. Lead may be in increasing demand in substitution for copper, zinc, tin, and aluminum.

The world production in 1950 is estimated at about 1,600,000 tons, of which the United States contributed about 27 percent, Mexico 12 percent, Canada 11 percent, Australia 12 percent, and Europe 17 percent.

Among the foreign sources Australia, Canada, and Mexico continue to be the world's prime producers of lead and all three have newly developed ore reserves. The Consolidated Mining & Smelting Company of Canada, Ltd. turned out about



150,000 tons of lead in 1950 or 90 percent of Canada's total production. Mine production in Africa reached an estimated 125,000 tons. The three prime producers are Societe des Mines de Zellidja in French Morocco, the Tsumeb Corporation, Ltd. in South West Africa, and the Rhodesian Broken Hill Development Co., Ltd. in Northern Rhodesia. The development of new mines in North Africa and French Equatorial Africa soon may contribute to the world supply as the result of ECA aid. The most important Asian producer is Japan which turned out about 10,000 metric tons in 1950. Its two important mines are the Kamioka and Hosokura, reported to have large ore reserves.

ZINC—Last year's "Accounting" stated "The world supply of zinc concentrates is plentiful but the present low price may soon result in a shortage." At present there is a serious world shortage of zinc.

Mine production of zinc in the United States in 1950 rose to 618,000 short tons, 25,000 tons more than in 1949. This was due in part to the increase in the market price which rose from 9.75¢ a pound at the beginning of 1950 to 15¢ in June and in September to 17½¢ a pound.

The Western states contributed 365,000 tons; the Eastern states 171,000 tons, and the Mid-continent states, at one time our main source, only 82,300 tons. Smelter production including secondary rose from 870,000 tons in 1949 to 915,000 tons in 1950. Domestic consumption in 1950 was estimated at 960,000 tons. Metal imports in 1950 amounted to about 156,000 tons or 30,000 tons more than in 1949.

In the foreign field Australia with its Broken Hill group of mines continues to be the largest world producer of zinc while Canada with its Consolidated Mining & Smelting Company, Ltd's. mines at Kimberley, the Hudson Bay Mining and Smelting Company, Ltd's. Flin Flon mine in Manitoba, and Buchans Mining Company's mine in Newfoundland comes second. In Africa mine production of zinc is being increased and new reserves of zinc are being developed in French Morocco, Algeria, Tunisia, South West Africa, Northern Rhodesia, and the Belgian Congo.

The foreign market during the last quarter of 1950 ranged between 21 and 24 cents a pound and because of this foreign mines will be tempted to ship to foreign rather than United States smelters if they can obtain a higher price. Thus the supply outlook in the United States is quite uncertain. Domestic mines, with present price incentive will probably increase their output 10 to 15 percent and plans are already made by the principal zinc mining companies to do just this.

TIN—We are still dependent entirely upon foreign sources for this strategic metal and thus far no satisfactory substitute has been found to replace it in the manufacture of tin plate.

The total imports of the metal and tin contained in the concentrates in 1950 amounted to 109,944 tons compared with 100,116 tons in 1949. Consumption of virgin tin in 1950 was about 70,000 tons compared with 47,917 tons in 1949. The difference between imports and consumption is being added to the government stockpile. Malaya stepped up its production from 55,791 tons in 1949 to 58,575 tons in 1950, and Siam from 7,940 tons to 8,541 tons, while Bolivian output dropped from 34,115 tons in 1949 to 31,714 tons in 1950, due largely to unfavorable political conditions.

Because of the difficulty of buying in London, United States purchases of tin have been concentrated in Singapore. As it was not possible to arrive at an agreement for Bolivian concentrates at the beginning of 1951 the old controls were extended for two months.

Beginning with February 1951 United States consumption for nondefense purposes was cut by 20 percent. Therefore, during 1951, 60,000 tons will be available as compared with 73,000 tons in 1950.

In the tin fields of Siam more than 30 dredges were in operation. In Indonesia, strikes, thefts, and shortages of spare parts resulted in failure to attain the goal set for 1950. Production from this country was up slightly over the previous year. Banka Tinwinning was the big producer with over 50 percent of the output and N. V. Billiton Maatschappij second with about 35 percent. Internal disorders continued to disrupt tin mining in Burma and production continued at about one-third prewar rate. Guerilla activity has forced the shut-down of all Anglo-Oriental-Malay Ltd. dredges in the Tavoy area. Australia continues to produce tin from the Mount Garnet, Queensland, dredging operation. Plans are complete for building of a tin plate mill at Port Kembla, New South Wales, which will require 2,000 tons of tin yearly to produce 120,000 tons of tin plate.

QUICKSILVER—Domestic production during 1950 was about 5,000 flasks, the lowest level on record during the last 100 years. Consumption in 1950 shows an increase, namely 41,250 flasks against 39,857 flasks in 1949. Imports totalled about 64,000 flasks compared with 92,929 flasks in 1949. Spain is credited with 53 percent of the 1950 imports; Italy 30 percent; Yugoslavia eight percent, and Mexico six percent.

The beginning of the Korean war marks the start of the rapid uptrend in the price of mercury from $78 a flask, September 1950, to $220 a flask, February 1951. Also, mine production due to this price incentive should show a rise during 1951.

In the United States the most important producer was the Mount Jackson mine in Sonoma County, California.

In the foreign field Spain and Italy continued to produce at about one half their potential capacity. Italy's 1950 output was about 1,760 tons as compared with 1,535 tons in 1949.

The use of mercury in the electrical industry gained sharply over 1949. Most of the military batteries now produced are for use in air-sea transceivers, and hearing aids also continue to be an important outlet for mercury batteries. Use of mercury in antifouling paint was more than double 1949 consumption.

TITANIUM—Expansion in the production of titanium pigments continued during 1950 and output was about one-third greater than in 1949. The DuPont Company's property at Starke, Florida, will soon reach its production goal of 120,000 tons of titanium oxide a year and at Allard Lake, Quebec, the operation of the first electric furnace at Sorrel was begun in 1950, and four additional furnaces are under construction. The smelter is designed to produce daily 700 tons of 70 percent TiO_2 slag.

Increasing and widespread interest in titanium metal is being taken by our larger mining companies because of its lightness and highly desirable properties as an alloy in structural steel. It is produced commercially by the E. I. DuPont de Nemours and the National Lead Company and it is estimated that more than 200,000 pounds of titanium sponge was made in 1950. Also, in Canada, Dominion Magnesium Corporation is producing titanium powder and pellets for use in high temperature alloy as stainless steel. The problem of price remains to be solved to attract large consumption of this metal.

MINERAL EXPLORATION

Much progress was made during the year in the field of mineral exploration. Papers on geochemical prospecting were presented at the Salt Lake City meeting of the AMC which covered prospecting in the Mississippi Valley by George M. Fowler, the Park City district by Ray E. Gilbert, and Tennessee by Owen Kingman.

The use of colored films in aerial photography has added a new way to detect mineralized areas. Colored pictures show delicate changes in rock weathering resulting from chemical action as well as changes in the rock formations which are not apparent on conventional film.

Successful magnetometer surveys have been carried out recently on the Vredefort Dome in the Union of South Africa, as described by Oscar Weiss in *Mining Transactions* of the AIME, Volume 184.

The Lundberg Exploration Ltd. reports much success in making combined aerial surveys using the airborne magnetometer and electromagnetic equipment at the same time. The company now is considering the adding of a Geiger instrument to the same plane so as to make all three surveys at the same time.

Magnetic methods account for nearly one-half the work carried out in the field of geophysical mining exploration and electrical methods approximately one third. Much interest in radioactive methods in the search for fissionable materials occurred in 1950 and many new discoveries were made with the scintillometer and other radiometric devices. Neither the use of gravitational nor seismic methods is of much importance in the exploration for ore deposits.

MINING METHODS

Research in problems of underground rock breaking during the year has shown clearly how and where greater economy may be realized. This has been demonstrated at the U. S. Bureau of Mines research stations at Rifle, Colorado, under the direction of Emery M. Sipprelle and Fred D. Wright, and at Mount Weather, Virginia, under the direction of Wing G. Agnew.

At Rifle the investigations in mining oil shale include the use of various diameters and lengths of holes, different grades of explosives, and amount of burden. Various types of tungsten-carbide bits have been tested in percussion drills and hydraulic rotary drills. Some remarkable results with the hydraulic rotary drill have been obtained as compared with using the percussion drill. A tungsten-carbide bit especially designed for the hydraulic rotary drill mounted on a jumbo machine, with controlled water pressure and speed, drilled from 100 to 200 inches a minute with one fifth the power consumption as compared with 10 to 20 inches utilizing conventional percussion drills.

At Mount Weather, after early experiments in blasting raise rounds with millisecond delays, trials were conducted in blasting 7 by 7 foot horizontal headings with millisecond delays.

Present data reveal that it is possible to break a longer round with from one to three fewer holes, all drilled straight in. Rock broken per round is finer but muck scattering and damage to timber are disadvantages of this method. Research work on this method of blasting will continue and details of similar experiments conducted in the field are sought for trial at Mt. Weather.

A recent survey at the large mines reveals that by the use of tungsten-carbide bits and smaller diameter holes, lighter drill mounts can be used and savings made in air and powder consumption, in capital outlay, in tonnage broken per man-hour, and in lower cost per ton.

Research and progress in roof bolting in metal mining prompted by the U. S. Bureau of Mines advanced during the year. The programs were conducted with a view of designing plans to fit local conditions in various mining camps. The advantages of roof bolting are as follows: safer working places, larger tonnages of ore removed, better ventilation conditions, quicker and cheaper installation as compared with conventional timber sets, elimination of resetting timbers shot out in mining operations and broken by moving ground and less handling of waste.

ORE TREATMENT METHODS

Important improvements in HMS, in rodmills for fine grinding, Humphreys spiral plants, cyclone separators, and the Fluosolids method for roasting ores were developed during 1950. Mr. Harlow Hardinge writes as follows:

> "The 11½ foot rod mill at Consolidated Mining and Smelting Company of Canada, Ltd. that we built has been in operation long enough to show quite remarkable operation in that the rod wear is less than ¼-pound per ton. The last report we had, which was in September of last year, indicated that over 2,500,000 tons had been put through the mill and the linings apparently had worn only about 25 or 30 percent of their life. The capacity of the mill, from one inch to about 20 percent through 200-mesh, gives a range of 8,000 to 8,600 tons per day, with a consumption of around 900-hp. The mill is operated in open circuit and is taking the sink feed from the sink-float plant."

Experimental work with HMS has reduced the size of feed steadily and the ways and means for separating sizes down to 65 mesh in a single machine, such as the Hardinge counter current drum or the Colorado Iron Works Company's Aikins classifier, now appears possible. In treatment of nonferrous and ferrous ores HMS produces high recoveries and makes it possible to handle large tonnages, and the rapidity of separation means more tons of product per man hour worked. The world's largest HMS cone plant at the Premier Diamond Mine of the Premier (Transvaal) Diamond Mining Company was first described in *Mining World* in August 1950.

The Hardinge Company mentions the following mechanical advantages in reference to the use of the application of its counter-current classifier as an HMS separator: 1) low power requirements—on Mesabi Range iron ore a 7-foot separator takes only 12 hp for 300 tons per hour of feed producing 225 tons per hour of "sink"; 2) the quantity of medium to fill the

circuit is considerably less than that of a cone of equal capacity; 3) low maintenance; 4) the machine will handle pieces of sizes up to eight inches and down to 65 mesh; and 5) it can be started under full load after power interruption.

Mr. Judson Hubbard, vice president, Humphreys Investment Company, has kindly supplied the following notes:

"The Mesabi Range in Minnesota continues to be the most rapidly growing field for the Humphreys spiral concentrator. All installations of previous years will continue in addition to five new spiral plants being installed for the 1951 season. It is estimated that by mid-season of 1951 spirals will be producing iron concentrates at a rate of 130 carloads per day. The most interesting new operation will be a two-stage spiral plant treating tailing pond fines with a rated capacity of 200 tons of feed per hour. Other installations involve recovery of fine values from HMS undersize and classifier overflow.

"In New York State a spiral plant has been ordered for 1951 installation for treating non-magnetic fine iron ore at a rated capacity of 100 tons per hour. In Western Africa a spiral plant will replace tables to treat a specular hematite ore. Capacity is estimated to be 200 tons per hour and will enable the company to double the present plant capacity without increasing the building size.

"Climax Molybdenum Company continued operation of its 128 spirals, treating about 6,000 tons per day of molybdenum flotation tailing for recovery of tungsten, tin, pyrite, and other heavy minerals. In connection with its announced program of increased mine output, the spiral plant will be increased substantially in 1951 for treatment of the additional tailing output."

The Humphreys spiral plants in Florida, treating large tonnages of beach sands at Starke, Jacksonville, and Ackam, described in last years Accounting, continued to operate successfully throughout the year.

The Funkhouser Company at Hartwell, Georgia, has installed a 16-spiral plant for the recovery of flake mica. The American Cyanamid Company is using 24 spirals in Virginia to remove slime and coarse silicon from an ilmenite ore prior to fine grinding for flotation feed.

Abroad, spirals are commercially treating barite in England, lead in Germany and Tunisia, chromite in Turkey, and titanium in Senegal.

The Dorr Company has supplied the following notes:

"The Dorr Company's FluoSolids roasting technique continues to expand into new fields. In addition to the installations for roasting gold ores in Canada, (three of which are now in operation) and for limestone calcination in Massachusetts, laboratory and pilot plant work was carried out during 1950 on the roasting of copper and zinc ores and the roasting of pyritic ores and concentrates for sulphuric acid manufacture. The reduction roasting of non-magnetic iron ores, with subsequent recovery of the iron by wet magnetic separation, is another promising field of application for this process. Major developments include means for pumping the feed in the form of a wet slurry into the furnace, thereby avoiding the difficulties of handling sticky filter cakes, and the use of the 'up-flow' principle by which fines are roasted in an inert bed and the calcine collected in cyclone collectors."

Interest continues in cyclone separators which find wide application in the field of sand-slime separations, desliming of flotation feeds, upgrading of various products, degritting of clays, and dewatering of mine fill. In general, the advantages of the wet cyclone over conventional classifying equipment, where it is applicable, include the handling of flocculant pulps without need for dispersing agents, denser, and, therefore, "cleaner" underflow products, with high capacities for relatively low installation costs and space requirements.

One of the most interesting developments in flotation reported this year is the process devised by the Minerals Separation North American Corporation for the beneficiation of iron ore. The method, which is described in "Iron Ore Flotation at Canisteo," *Mining World*, December 1950, uses a combination of caustic starch, lime, and fatty resin acid mixture (tall oil). In this process the silica is floated leaving the iron in a concentrated form in the flotation "tailing." The method is considered applicable to tailings from washing and gravity-treatment plants, material too fine for ordinary concentration methods, and for non-magnetic taconites.

An unusual application of flotation is that described by R. T. Hukki and U. Runolinna, "*Separation of Precious Metals from Anode Slimes by Flotation*," AIME, Vol. 187, Nov. 1950. The slimes from the Outokumpu electrolytic refinery at Pori, Finland, carrying 0.5 percent Au and 9.38 percent Ag, were floated by means of American Cyanamid Reagent 208 and frother B-23. A recovery of over 99 percent of both gold and silver was made in a concentrate assaying 2.04 percent Au and 40.03 percent Ag.

STOCKPILING

With the passing of time it becomes necessary that we review the basis of stockpiling. Therefore, we must forget the former narrow concept of stockpiling for mobilization and embrace a much broader program aimed at national security.

The objectives of the five-year stockpiling plan interrupted by the Korea police action provided scarcely a minimum to prepare for global war. Twice we have had the experience of proving that industrial production greatly exceeded the target and, if the next world conflict follows the criteria already established, our nation will be confronted with a practically unsurmountable job to provide mineral raw materials for mobilization and war. Bearing witness to this fact, Congress appropriated more funds for stockpiling purposes after the Korean incident.

It was revealed recently that the stockpiling objective had been raised $8,870,000,000 for strategic and critical materials, an increase of $3,770,000,000 over the Government's objective of a year ago. The same source showed that at the year's end the Munitions Board had accumulated $2,720,000,000 worth of strategic and critical materials. A balance of $2,200,000,000 remained in cash and obligational authority with which to purchase additional material. The statement was made that industrial needs for essential civilian and defense production might run so high that deliveries to the stockpile even might be curtailed severely. A supplementary regulation issued on February 1, 1951, exempts from the price ceiling order the sales of mineral commodities that are produced and supplied normally for military use only.

An idea, not new on the part of the authors, but worthy of repeating in this Accounting, is to enlarge the stockpile target, paying out a prescribed amount in gold annually from the vaults at Fort Knox, Kentucky, to finance the purchases. Purchases would be restricted to metals and minerals which would not deteriorate and for which future utilization is deemed certain.

Money spent for essential mineral commodities should be considered as a capital investment and not as operating expense. Considering growing consumer demand and the general advance in nearly all mineral and metal prices, it is entirely possible that the money invested might yield a profit if it were announced that the above-mentioned sum in gold would be spent in mineral purchases for a term of 10 years with a predetermined portion to be spent overseas annually.

Essential and strategic minerals in which the United States is not self-sufficient should be acquired as speedily as possible from any country having a surplus or which offers them in trade. If we cannot improve our self-sufficiency in terms of proved and exploitable mineral reserves, we must acquire by purchase or barter stocks which we can store within the borders of the United States.

By setting our goal on a longer term program, using gold in exchange as outlined in the foregoing part of this section, we would impart a strong stimulus to world trade which should go far in bolstering up industry on a world wide basis. As the surplus gold has little industrial use the United States would stand to gain by exchanging it for highly essential mineral raw materials. The dollars are in demand in foreign countries and would contribute to the redistribution of gold of which the United States has the lion's share.

TRADE AGREEMENTS, TAXES, AND TARIFFS

The existing Reciprocal Trade Agreements Act of June 17, 1948, was extended for three years without change in February 1951. In debating the bill, the main issues were for writing in a "peril point" provision, which would provide some standard of safety to guide the President in determining relief for industry under the escape clause, and preventing most-favored-nation treatment to Communist China, Russia, and Communist satellite countries.

An Excess Profits Tax Bill was promulgated late in the year. This bill designed to provide $3,300,000,000 in corporation profits embraces an excess profits tax of 77 percent, an increase in corporate surtax by two percentage points, an overall corporate tax ceiling, a sliding average earnings credit, a sliding invested capital credit, and a minimum credit.

The question of tariffs entered into legislative talk many times during the year. Facing a drastic shortage of certain mineral commodities in which the United States was deficient,

the question resolved itself into whether or not to maintain high tariffs to protect the industry which was unable to supply a sufficient quantity of the raw materials or to lower the tariff barriers and permit American industry access to low-wage-produced foreign supplies. Regarding the attitude of friendly nations toward the United States' protective tariffs, the following quotation is extracted from a letter to the senior author by a Canadian who ranks high in the minerals industry of the Dominion:

". . . . . In my opinion, the question of United States tariffs on mineral products should not be a one-way street. There is not much object in putting money into foreign fields without some reasonable assurance of a market. The greatest opportunity for the development of markets exists, of course, in the United States. One cannot develop such markets without stability and I am convinced that investors are deterred because they are concerned as to the stability of the United States markets not only because of the variable record of United States business activity but perhaps because of the past record of political response to pressure groups affected by external competition. . . . . ."

DEFENSE MINERAL AGENCIES

Shortly after the outbreak of the Korean War the Defense Minerals Administration was organized to serve as the agency to forward the minerals industry of the United States and to aid in the development of mineral supplies. As organized, the Agency has three principal functions—to maintain production from existing sources of mine supply, to expand production from known but practically inactive sources, and to encourage exploration and development of new sources, particularly in the United States. Three divisions have been established under the administrator which are: a Requirements Division responsible for producing materials for the maintenance, repair, and operation of mines and smelters; a Supply Division charged with analyzing and maintaining the forecasts of the total supply critical metals and minerals; and a Production Expansion Division to conduct preliminary negotiations leading to the procurement of loans and contracts and to receive certification of these.

Since the beginning of the Defense Minerals Administration nearly 75 percent of the applications have been for loans, and commodities on the critical list are given priority. A partial list of the critical materials is made up of antimony, spinning grade asbestos, beryllium, bismuth, cerium (and rare earth ores), chromite, cobalt, columbium-tantalum, copper, corundum, cryolite, fluorite, graphite, kyanite and mullite refractories, lead, lithium, mercury, mica, molybdenum, monazite nickel, the platinum group metals, sulphur, talc, tungsten, and zinc.

It is expected that DMA will recommend that the Government endeavor to make fuller use of domestic resources. Also, plans are underway for the possible establishment of procurement depots where small operators and mining companies may dispose of their products.

The Defense Production Administration has allocated $10,000,000 of the funds authorized by the Defense Production Act of 1950 (enacted into law September 8, 1950) to the Department of the Interior for use in stimulating exploration for strategic and critical metals and minerals needed in the defense program. The funds will be used to assist prospectors and mine operators in searching for and blocking out new reserves of ore needed for the Nation's rearmament program and for essential civilian requirements. The funds will be used generally on a matching basis and the Government's share would be repayable if the ventures are successful.

To facilitate the carrying out of responsibilities an organization of 80 field parties already has been appointed and headquartered in Denver, Colorado, for the purpose of examining properties of applicants under the provisions of Sections 302 and 303 of the Defense Production Act, which law authorizes the President to make provision for loans and to arrange other aid to individuals and mining companies to stimulate exploration, development, and mining of the strategic and critical metals and minerals.

MINERAL AND METAL CONTROLS

Definitely in the offing as this Accounting is written are two actions in which the United States Government will play a large part. These are allocation of scarce mineral raw materials for essential use to domestic consumers and an international raw materials allocation board. The first action already has had incipient birth and now applies to aluminum, copper, cadmium, cobalt, columbium, molybdenum and others. The second is the International Minerals Conference, now in the well advanced planning stage, and will lay the ground work for sharing of scarce mineral materials among the Western Allies on a compulsory basis. By so doing, a large part of the world's trade will be controlled. A Central Raw Materials Committee has been set up, the main function being to watch raw materials and to set up allocation committees (some of which are now formed) for specific metals and minerals as they become scarce. Principal members are the United States, Britain, and France. To be represented are the main producing and consuming countries. Exportable surpluses will be prorated among all of the consumers.

Evidence of tightening controls make headlines daily. Effective March 1, NPA allocated all tungsten; nickel will be banned for nonessential uses; use of tin is not permitted in a long list of nonessential products; aluminum is banned for use in more than 200 less essential items ranging from automobile hardware to building decorations; also, manganese and tungsten ores are to be allocated largely to the manufactures of defense materials.

ATMOSPHERE IN MINING FIELDS ABROAD

The results of ECA aid to the mining industries in the participating countries were particularly favorable during 1950. Making use of the United States counterpart-fund credits for the purchase of strategic materials, the ECA headquarters in Paris, after careful study of various mine development projects, authorized direct advances of capital up to 70 percent of the amounts required to private mining companies. These projects include lead, cobalt, and manganese mines in French Morocco, lead-zinc mines in Tunisia, an electrolytic zinc plant in Italy, lead-zinc mines in Greece, chromite and manganese mines in Turkey, and several important mine development projects in the Belgian Congo and South Africa. These developments, aided by ECA funds, will result in increased exports of strategic minerals to the United States during the next few years.

In Latin America and the rest of the world many important mine development projects have been given consideration both by the Export-Import Bank and the Bank of Reconstruction and Development, but thus far only a few loans have been granted.

The Bank of Reconstruction and Development maintains a policy of financing only self-supporting projects and the Export-Import Bank operations are limited to very special industrial undertakings where American equipment has to be financed on long-term conditions. All such loans in a foreign country must have the guarantee or approval of the local government.

Most American mining companies are well supplied with venture capital and technical staffs ready to cooperate with the owners of promising projects abroad. Therefore, rather than through government loans, the real solution is for our Government 1) to help establish more favorable conditions through our embassies abroad for American mining companies ready to cooperate with local mine owners in carrying out mineral production projects, and 2) in the event local governments refuse to exchange local currencies into dollars for payment of dividends, also in cases where the local government takes over the property in which American interests are involved and payment is made in local currency, our Government should agree to accept such local currency in exchange for dollars. Such an arrangement would create a more favorable atmosphere for American investors, as a foreign government, knowing that the American investor is so protected, would hesitate not to make the dollar exchange available or to block dividend payments.

TRUMAN'S POINT IV

The key to world prosperity and peace is greater production through a more vigorous application of modern technical methods, whether it be for wheat, livestock, or mineral products. As the output per man-day is considerably greater in the United States because of our modern methods of production, particularly in the mineral field, it is proposed by some to lend our technical experts to cooperate with those of the countries which have worth while resources of minerals and which request our cooperation. The major effort in such a program must be made as well as financed by the people who own and govern the under-developed natural resources, we to supply technical aid and a market for the products.

Point IV proponents also point out that American technology can do more to raise world living standards than dollar credits and food supplies. They further state that the value of technology is that it enables people to help themselves and gives them self-esteem and self-reliance. American private enter-

prise in the development of mines and oil fields has shown the results of our technological achievements and interest in the welfare of the workmen, and how this aid has benefited the individual nations as well as the people. These objectives appear logical, but what about the conservative government officials in the foreign field?

Mining engineers of the French Ministry of Overseas Possessions were interviewed by the senior author in December 1949. Their reaction to an outlining of the prepared Point IV Program was an evident sensitivity as to their position with Colonial Administrations. They do not want American Government engineers to enter their field of action and, seemingly, this attitude is reflected in the reaction of private companies. Nevertheless, certain mine owners in North Africa and in France have been extremely anxious to get American machinery for their mines and mills, where such aid may be obtained as an advance against future deliveries of metal. In one instance, however, a French company, Societe des Mines de Zellidja, did permit an American company, the Newmont Mining Corporation, to purchase a minority interest in their property. Several million dollars have been advanced since by ECA to more than quadruple Zellidja's production.

The British Government's attitude toward Point IV is quite the opposite. It urgently requests our Government to supply geologists and engineers to cooperate with British personnel in field surveys and projects for development of mineral resources in the Empire. American mining companies are working harmoniously with local mining companies and British capital in the exploitation of ore deposits in South Africa and other Empire countries.

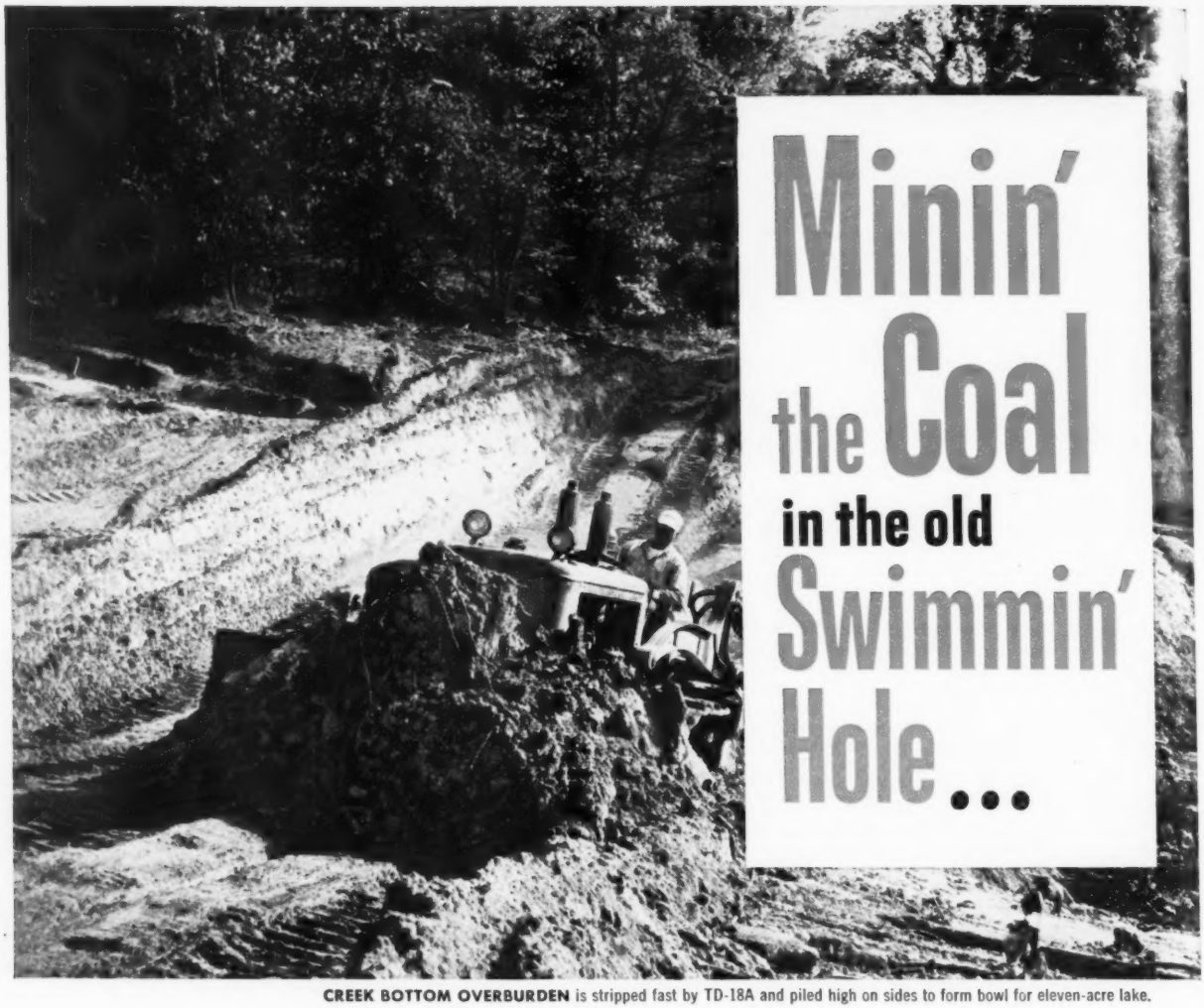
Considerable resistance exists within the United States to the Point IV Program as many operators feel that lending our technical skill to foreign countries may result in destructive open-market competition through the cheap labor available in those countries. To be noted, however, is that of the $35,000,000 appropriated under Point IV only about five percent of the total is reported to be for aid to the mineral industries.

CONCLUSIONS

In the domestic field the policy of our Government is to encourage mineral production from existing mines and the exploitation of new deposits. For this purpose the DMA (Defense Minerals Administration) has been organized. The suitability of the government application for loan forms by those desiring loans for mine development projects has been questioned and forms more suitable to the mine owner desiring financial aid will become available soon. The Defense Production Act of 1950 allocating $10,000,000 to be used on a matching basis for stimulating developments of strategic mineral deposits will doubtless give encouragement to the mine owners when they get any of the money.

In the foreign field our nearest sources of strategic minerals are Mexico, Canada, and Cuba. Mexico is probably the most important, and a more cooperative relationship should be developed between the two governments to adjust the trade barriers and thus encouraging the flow of strategic minerals to the United States. Action of this sort already has been taken with Canada. In the other American countries better relations with the local mining industries are being cemented by representatives of the U. S. Geological Survey and the U. S. Bureau of Mines, but a more permanent contact could be established through minerals attaches stationed in the various American Embassies as was done during 1940 to 1945. Out of ten former minerals attaches in Latin American countries only one remains. Lack of appropriations was the reason given for discontinuing this service. The present need for minerals attaches in Latin American countries is urgent. Minerals attaches should be stationed in Mexico, Peru, Chile, Argentina, Venezuela, and Cuba. At present only Brazil is favored with a minerals attache. The attaches should be mining engineers with wide experience, who would cooperate with the local mines department directors on their problems with the mine operators in working out the details of mine development and ore treatment problems. They should also keep our government informed on any new mineral discoveries and mine developments. They would advise the local mine operators as to the purchase of mining machinery and sales of their products and on ways to obtain financial aid for development projects. Established personal contacts with local mine operators through minerals attaches is one of the best safeguards in maintaining the flow of strategic minerals to the United States.

The authors wish to give thanks to all Bureau of Mines personnel who gave time and thought in supplying many of the data and in critical reading of the manuscript of this article.
March 1, 1951



Minin' the Coal in the old Swimmin' Hole...

CREEK BOTTOM OVERBURDEN is stripped fast by TD-18A and piled high on sides to form bowl for eleven-acre lake.

How an International TD-18A strips overburden in creek bottom coal mine, later to become a lake resort

They moved a creek to get the coal. And soon there'll be a new lake near Harrisburg, Missouri, compliments of Taylor Barnes, mine operator.

While creek flowage is pumped through a by-pass, a TD-18A strips overburden from coal and piles it high on the sides of the creek bed to form a bowl. When pit is abandoned, the creek will flood the bowl to form an eleven-acre lake.

Taylor Barnes sings the praises of the TD-18A: "We sure had our eyes opened by its performance, and the distributor service behind it."

Isn't it time you saw your International Industrial Distributor? His service department is fully stocked with International parts, and his factory-trained mechanics will keep your Internationals on the job and making money for years to come.

BOWL FOR SWIMMIN' HOLE takes shape as International crawler exposes coal underlying creek bed in profitable mining operation.

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METALS AND MINERALS REVIEW

ALUMINUM

By DONALD M. WHITE
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The Aluminum Association
New York, New York

The U. S. aluminum industry produced 19 percent more primary metal during 1950 than in the previous year. Primary production during the final quarter was 382,176,940 pounds to bring the year's total to 1,437,255,518 pounds.

Defense and Stockpiling

Curtailment of civilian use of this strategic lightweight metal is the prospect for 1951. Although plans have been advanced for increasing the industry's capacity by some 20 percent during the year and for further increases in 1952, most of the metal so produced will be earmarked for defense orders or the national stockpile.

Congress passed the Defense Production Act after the outbreak of hostilities in Korea, and the establishment of a National Production Authority soon followed. To assure the availability of enough aluminum to meet all defense needs, the NPA issued an order restricting civilian use of the metal beginning January 1, 1951. The civilian cut originally was scheduled for 35 percent beginning at that time, but to ease the hardships which this curtailment would have imposed, the NPA reduced the cut to 20 percent in January and 25 percent in February 1951.

As 1950 drew to a close, deteriorating international relationships again focused major attention on military uses. As in World War II, aircraft will require by far the largest amount of metal used in military equipment. Today military planes are considerably larger than those of World War II and will require correspondingly larger amounts of aluminum. Other military applications developed during World War II are again coming to the fore, as well as a number of newer uses, some of which cannot be disclosed.

Non-aircraft military uses of aluminum previously developed include the use of foil for radar "chaff;" foil packaging materials for foods and other military supplies; aircraft landing mats; "bazooka" barrels; body armor; and portable pontoon bridges. Some of the more recent military applications include prefabricated portable buildings; helmets; and atom-bomb parts.

Aluminum Plant Expansion

In an effort to increase production so as to meet all military needs and a higher proportion of civilian demand, plans have been made which will expand the industry's primary reduction capacity by more than 60 percent. Some 930,000,000 pounds will be added to the industry's annual capacity, all of which is scheduled to be placed in operation by the end of 1952. Idle equipment in the Massena, New York, and Badin, North Carolina, plants of the Aluminum Company of America also is being reactivated. Most of this equipment is scheduled for operation during 1951.

All three of the present primary producers: Aluminum Company of America, Kaiser Aluminum and Chemical Corporation, and Reynolds Metals Company, are scheduled to enlarge their present facilities and to build new plants. In addition, two newcomers to the primary aluminum field will build new reduction plants: Harvey Machine Company, Inc., Torrance, California, fabricators of extruded aluminum products; and Apex Smelting Company, Chicago, producers of secondary aluminum ingot for many years.

New Facilities in 1950

Some new facilities were completed during 1950. One new reduction plant was placed in operation at Point Comfort, Texas, by the Aluminum Company of America. This plant, which has an annual capacity of 114,000,000 pounds, marks the first use by the aluminum industry of natural gas for the production of the large amounts of electric power required. Kaiser Aluminum and Chemical Corporation and the Reynolds Metals Company also increased their primary metal output in 1950. These increases are estimated to total about 100,000,000 pounds annually.

Both Alcoa and Reynolds placed in operation during 1950 new mills for the manufacture of electric cable, the former at Vancouver, Washington, and the latter at Listerhill, Alabama. Both companies installed additional rod and bar rolling facilities.

Another important 1950 development was the preparations made by the Reynolds Metals Company for mining of bauxite in Jamaica. Ore obtained from these deposits will augment the present sources of bauxite in Arkansas, Surinam, South America, and Indonesia.

Continually rising costs forced a moderate advance in the price of primary aluminum during 1950, bringing the price of pig to 18 cents a pound and ingot to 19 cents. Secondary aluminum ingot (processed from scrap) again advanced in price ahead of the price level of primary metal, as it did after World War II when the unexpectedly large demand for aluminum created scarcities.

Member companies of The Aluminum Association account for all of the primary aluminum produced in the United States and about 85 percent of all semifabricated aluminum products. As in previous years, the Association continued during 1950 to serve as a medium for handling a variety of industry problems. During the coming months the Association will maintain a close liaison with Governmental authorities in Washington in an effort to render all possible assistance in the current emergency.

ANTIMONY

By JAMES P. BRADLEY
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Although no statistics on consumption are available since the end of 1949, the indications are that U. S. consumption of primary antimony increased sharply during the latter part of 1950, reaching an annual rate of possibly 20,000 tons or more. The outlook is for a further increase in demand due to the impact of the defense program. Information as to military requirements is a top secret and is even withheld from producers, but there are rumors that large quantities of antimony oxide will be needed for the flameproofing of textiles, plastics and paints. The nonmilitary consumption of antimony oxide in the flameproofing of plastics and textiles continued to grow during 1950 and shows promise of much further growth in the future, particularly in vinyl plastics.

Domestic mine production of antimony is estimated at 1,500 tons and imports at 15,000 tons for the year 1950. It is estimated that the consumption of primary antimony during 1950 was greater than the supply, which, if true, would make the second year in succession (as well as the third year out of the last five) in which there has been a deficit in supply. These deficits have resulted in the reduction of industrial stocks to a dangerously low level, at a time when demands are rapidly increasing. Stocks of primary antimony available to industry totalled 35,433 tons at the end of 1943 as compared to 6,073 tons at the end of 1949 and, as mentioned above, it seems probable that stocks declined still further during 1950.

Imports of antimony in all forms (metal, ore and oxide) were heavy during the summer and late fall of 1950 and sales were made at distress prices. Toward the end of the year, imports declined and foreign supplies are now scarce. In the summer of 1950, foreign antimony metal was selling for about $0.20 per pound and Bolivian ore at less than $2.00 per unit as compared to prices (nominal) in late February, 1951, of $0.50 per pound and $7.00 per unit, respectively.

During the past two years, the domestic antimony mining and smelting industry suffered from a flood of cheap imports following the devaluations of various foreign currencies. Tariff protection is practically nonexistent. Ore, comprising the bulk of antimony imports, is on the duty free list and the duty on metal is only two cents per pound (restored to two cents in December, 1950, after being cut to one cent in May, 1948). Foreign competition has resulted in prices too low to maintain the domestic industry in a healthy condition, let alone allow any

margin for exploration or expansion.

The Munitions Board's "Stockpile Report to Congress," dated July 23, 1950, listed antimony among the commodities whose stockpile objectives were nearing completion or had been completed. Industry can only make a guess or estimate as to what the National Strategic Stockpile contains. However, the industry estimates—despite the above report to Congress—consider the antimony stockpile supply, in the event of an all out war or emergency, would take care of only a few months' requirements.

For many years, the bulk of domestic mine production has been coming from the Yellow Pine mine at Stibnite, Idaho. The new antimony smelter at this property operated intermittently during 1950 while numerous metallurgical difficulties were being worked out. Due to improvements and plant additions now under way, the 1951 output (largely in the form of antimony oxide) should exceed 3,500 tons. Increased mining activity is also expected in other mining districts in Idaho and Nevada. There are many deposits of antimony ore in the western states, but no really large expansion of domestic antimony mining can be anticipated unless some form of Government encouragement is inaugurated, such as a guaranteed market at higher prices for a period of years.

The outlook for enough antimony to meet our country's essential civilian and military requirements during the coming year is not promising. Industrial stocks cannot be drawn down much further and although domestic production will be expanded, the prospects for adequate foreign supplies are very uncertain. China, which in normal times supplies about two-thirds of the world's antimony, cannot be counted on as a reliable source. Mexican production is low and will take some time to expand, and there is active European (and possibly Russian) competition for available Mexican and Bolivian ores.

THE ATOM

By THE STAFF OF THE ATOMIC ENERGY COMMISSION'S RAW MATERIALS OPERATIONS OFFICE

With the beginning of the second half of the 20th century, the infant domestic uranium mining business completed a year of record growth. Exploration for new deposits was conducted in favorable areas and a brief sampling of some of the results is presented here.

In the geologic group of primary uranium-bearing vein deposits the outstanding developments occurred in the Marysvale, Utah, area; the Boulder batholith of Montana; and in fluorite deposits in Utah. Sedimentary deposits of interest were found. Carnotite ore reserves of the Colorado Plateau were extended through new findings. Copper-uranium ores of potentially great importance were further delineated and, close to the end of the year, important occurrences of uranium ores were discovered near Grants, New Mexico.

Marysvale, Utah Deposits

Vein deposits in the Marysvale, Utah, area are located near the contact of a Tertiary stock and a series of volcanics. Early in 1950 an ore-buying station was established there by the U. S. Atomic Energy Commission to encourage development of the district. At the close of the year development ore of 0.10 percent U_3O_8 was being purchased and stockpiled as long as the shipments averaged 0.15 percent U_3O_8 or more.

Uranium minerals at Marysvale are in filled fractures in quartz-monzonite. Primary minerals have been found in the Prospector vein below a depth of 70 feet. The vein has been opened to the 200 foot level. In depth the uranium occurs as uraninite in narrow vein fillings and fissures in which lenses, pods and films of pyrite and magnetite are mixed with fine-grained pitchblende. In some places, mining widths of several feet have been exposed. Drilling contracts have been let to develop detailed data on ore-bearing structures.

Several radioactive veins in the Boulder batholith of Montana have been partially explored by private interests. Near Clancy, Montana, some exploration headings are being driven to obtain information in depth on the most promising outcrops. Near Boulder, Montana, where uranium minerals were discovered on the dump of an abandoned 80 foot shaft, further development work has been done.

Arizona Developments

One of the outstanding developments of the year was the discovery of carnotite deposits in the Lukachukai Mountains of Arizona. Exploration indicates that an appreciable tonnage of ore can be developed. Diamond drilling has revealed that the thickness of deposits ranges from a few inches to as much as eight feet. These deposits occur in tabular and lenticular form distributed through the Salt Wash member of the Morrison formation. Development of the area has been hampered by costly road construction. However, now that the region has been opened up, it is expected to attract the attention of producers.

In Utah, the area within the Temple Mountain district considered favorable to the occurrence of uranium ore was greatly enlarged and a new ore horizon opened up. Carnotite ore as thick as 25 feet has been drilled and the future of the district appears bright.

Copper-Uranium Studied

Southern Utah and northern Arizona are the scenes of activity in "copper-uranium" deposits. Some forty-odd individual occurrences of copper-uranium ores indicate the potential importance of the area. Concentrations of copper-uranium and iron minerals occur close to the contact of the Shinarump and Moenkepi formations which have been traced for several hundred miles. At a producing property, development has disclosed primary copper and uranium mineralization. The grade of the primary ores is higher than that of the oxidized ores on the outcrop.

Deposits of copper-uranium ores have been found in five general areas: Capitol Reef, Circle Cliffs; the west side of the San Rafael Swell; the White-Canyon—Red Canyon area; the Silver Reef district; and the Navajo Indian reservation. Development to date has been minor but it is expected that activity will be greatly increased in 1951. On the whole, exploration of these deposits offers a field of great opportunity to develop new sources of ore.

At the close of the year announcement was made of the discovery of uranium northwest of Grants, New Mexico. Uranium minerals have been found in fractures and replacing limestone in several localities on land held by the Atchison, Topeka and Santa Fe Railway Company. Sampling and study of the area is underway by the staff of the railway with the cooperation of the AEC. Preliminary studies indicate that mineralization is widespread and near the surface and that deposits may provide significant amounts of uranium.

Only two plants were processing uranium ores in the Colorado Plateau area during 1948; today six plants are operating and a seventh plant, at Grand Junction, Colorado, commenced operations early in 1951. During the closing months of 1950 negotiations were under way to utilize a former Defense Plant Corporation plant at Salt Lake City, Utah, for the production of uranium. It is expected that this plant will be in operation relatively soon. Additional plants will be provided as rapidly as the ore supply justifies.

BERYLLIUM

By D. H. HERSHBERGER
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The beryllium industry depends upon beryl for its raw material and most of it is imported. The new supply of domestic and imported beryl for the year 1950 was approximately 22 percent greater than for the previous year and was second only to the record year of 1943 when 4,840 tons were imported and 340 tons were shipped from U. S. mines for a total of 5,180 tons.

United States Receipts of Beryl in Short Tons by Countries for 1949 and 1950

Country	1949	1950[1]
Brazil	3,264	2,543
British East Africa	11	11
Canada	0	29
French Morocco	22	77
Japan	107	44
Mozambique	107	130
Norway	10	0
Portugal	0	28
Southern Rhodesia	0	464
Union of South Africa	290	1,401
United States	346	360[e]
Total	4,157	5,087

[1]Preliminary
[e]Estimated

World Production

Reduced purchases by Great Britain, increased production in Union of South Africa and opening of the new source, Southern Rhodesia, provided the bright spot in U. S. imports which more than offset Brazil's decline in exports. Canada was another encouraging addition to the list of providing countries. Further working of a producing pegmatite in New Mexico revealed an unusually concentrated occurrence of beryl crystals as the most important domestic development of the year.

During 1948 the prices paid by processors of beryl increased markedly from about $18 per short ton unit of BeO content to around $26. In 1949 a premium

price schedule was followed paying $26 for 10 percent BeO content, $27 for 11 percent, and $28 for 12 percent. This practice was discontinued early in 1950 because only a higher yield could justify a premium price per unit for higher grade ore as the BeO content of the ore is paid for on the basis of an independent analysis. The price of $26 then applied to beryl containing a minimum of 10 percent (theoretical maximum is 14 percent). In August the price was increased to $28. Some very small purchases of domestic ore were made by consumers for special ceramic purposes at around $30.

Consumption Doubles

The consumption of beryl in 1950 was double that of 1949 due to greater demands for beryllium alloys as well as for the metal itself. However, the supply picture above permitted substantial additions to stocks on hand. This condition does not, however, afford room for complacency because many additional uses of these alloys can and would be made if larger resources of raw material were available. The beryllium industry would undoubtedly grow if the mining industry could increase these resources by an economical procedure such as separating the beryl crystals too small for hand-cobbing, and in this way exploit another source which remains untapped.

COBALT

By HOWARD WALDRON
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In the year 1950, at a stable price of $1.80 per pound, cobalt became widely recognized as one of the key metals of modern technology. Demand for the silvery white, moderately heavy (8.9 gravity, about the same as copper), hard (5.5 hardness on Moh's scale), refractory (1480°C melting point) metal increased sharply; the increased demand came about partly because large sections of the world returned to an armament economy, but even more so because the field of cobalt uses expanded, and because most of the new and old users demanded a greater share of the cobalt supply. In the United States, the world's greatest consumer of the metal, 1950 total consumption increased by 76 percent to 8,280,000 pounds; of that total, metallic consumption increased 91 percent to 6,190,000 pounds, and nonmetallic consumption increased 37 percent to 2,090,000 pounds.

Machine-Power-Atomic Uses

The metal was used in a variety of ways which make it, more than any other metal, a symbol of the machine-power-atomic year that was 1950. A use which promises to be of great importance is for the radioactive isotope, cobalt 60, which, among other things, promises to supplant the radium now used in industrial and medical radiology. Cobalt for permanent-magnet alloys (such as Alnico) took the largest part of the total product, and that use grew by 137 percent over 1949. Superalloys, iron alloys which also contain tungsten, chromium, and molybdenum, were the most rapidly expanding use.

Production to Be Expanded

Expanded facilities for production of cobalt on a worldwide scale pointed toward some relief of the supply problem by the end of 1951: In the Belgian Congo, production from the world's largest producer, Union Miniere du Haut Katanga, was increased in 1950 to an estimated 9,900,000 pounds of contained metal; the increase was made possible by an extension of ore reserves and by an increase in available power.

At Blackbird, Idaho, Calera Mining Company pushed development of mining, milling, and surface facilities to process 600 tons of cobalt-copper ore daily, and to produce a recoverable 2,000,000 pounds of cobalt yearly by late 1951. Near Garfield, Utah, Calera was building a refinery to process Blackbird concentrates into metal by late 1951. At a later date, a planned expansion will boost milling capacity at Blackbird to 1000 tons daily, and will boost refining capacity at Garfield to approximately 3,300,000 annual pounds of cobalt metal.

COPPER

By W. W. LYNCH
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The beginning of 1950 found the copper industry seemingly restored to health after having passed through a period of severe slump during the second and third quarters of 1949. Nevertheless, uncertainty existed at the outset of 1950 as to how long the condition of restored health might last. The consensus in the copper industry seemed to be that good business would probably continue for a few months, perhaps throughout the first half of 1950, but there was decided hesitancy to predict as to what might happen thereafter. There was, indeed, even a fear among some that another recession might take place during 1950.

Those who at the beginning of 1950 predicted good business in copper for the first six months, proved to be correct. Their hesitancy to forecast a continued high demand for copper throughout the year, as actually occurred, can be excused on the grounds they could not foresee, nor could any of us, the later events in Korea. What might have been the situation in copper in the last half of 1950 had it not been for the Korean war is now anybody's guess.

Demand Far Above Supply

This is not to say that the military demand for copper in the latter half of 1950 was, in itself, very high. On the other hand, an already high civilian demand, apparently spurred on by fear of later scarcity, plus actual military demand plus Government stockpile demand created a total demand far above the total supply of combined domestic production plus imports.

On the basis of use of refined copper by domestic fabricators, consumption in 1949 amounted to about 1,053,000 tons. For 1950 the comparable figure was about 1,455,000 tons. In addition to the consumption by fabricators, a sizeable amount of copper went into the Government stockpile, this requirement in 1950 apparently being higher than in 1949. In 1949 there was an adequate supply of copper to meet both civilian and Government stockpile demands. In 1950, particularly in the latter half, total demand exceeded supply. It is difficult to estimate what the 1950 consumption would have been if the supply had been sufficient to meet it.

Starting about the first of September, 1950 there developed a "mad scramble" on the part of consumers to purchase copper and copper products. The above table of prices shows that the "official" price of copper, meaning that of the major domestic producers and refiners, did not go above 24.5 cents per pound, Connecticut Valley basis.

"Premium" Market

This does not mean, however, that fabricators were able to obtain all their requirements at this price. A "premium" market developed to the extent that, according to reliable reports, refined copper was sold at a price as high as 40 cents per pound during the last quarter of 1950. This price was apparently demanded and obtained by brokers and dealers who somehow were able to acquire copper from abroad or, in some instances, from purchasing scrap and having it refined on a toll basis.

Moreover, former ability of fabricators to purchase copper produced at custom refineries from scrap came to an end, due to the fact that prices of scrap soared to a point where refineries could no longer afford to purchase it and sell the resultant refined copper at 24.5 cents per pound. There then developed a "scramble" for scrap by fabricators and manufacturers, who arranged with the refineries to treat the scrap on a toll basis. The resultant copper cost such fabricators and manufacturers during the last quarter of 1950 at least 32 cents per pound, and undoubtedly higher prices in some instances.

Under the above-mentioned circumstances, it is obvious that only restraint on the part of the major domestic sellers of refined copper kept the price from skyrocketing above 24.5 cents per pound. Meanwhile, in Europe and elsewhere abroad, the general price of copper was, reportedly, 30 cents or higher per pound, which also was the case in early 1951.

Outlook for 1951

The outlook in copper for 1951, due to the declared emergency and attending circumstances, is for continued high demand and scarcity of the metal. We have already started to live in a strictly controlled economy and warlike atmosphere. How far the controls will go is uncertain at this time. It seems safe to assume that in 1951: (1) the price of domestic copper will not fall because of lack of demand; (2) the price will be controlled, at least indirectly, by Government authority; (3) "premium" prices both in refined copper and scrap will disappear, except for minor "black market" operations, through Government control; and (4) because of defense requirements, the scarcity of copper for ordinary civilian usage will be greater than in 1950.

Through the National Production Act of 1950, the Government has finally taken a step toward conserving our resources of copper and increasing production for defense purposes. Through procurement contracts coupled with Federal guarantee of loans, it is to be hoped that new mines may be developed and certain old ones may continue to operate. The benefits of the Act in this regard will depend largely on the interpretation and administration of the law. Time will tell as to accomplishment for the copper producing industry.

FLUORSPAR

By C. O. ANDERSON
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Although the final figures for the 1950 fluorspar statistics are not yet available, several very interesting comments may be made by interpolating or extending the 1950 figures which are available. Fluorspar consumption reached an all time high in 1944 with a figure of 410,170 tons. A sharp drop in consumption occurred during 1945 and resulted in only 303,000 tons for 1946. From this low point the trend has been sharply upward, was interrupted somewhat in 1949, but broke all records at about 415,000 tons in 1950. In 1950 the United States was not presumably producing for a war effort, and hence as the fluorspar producers get ready for 1951 and future years, a difficult question is: What will this consumption figure become?

Shipments Below Consumption

The shipments from domestic mines tell an interesting story. For many years these shipments kept pace quite well with consumption even in the peak year 1944, but beginning in 1947 these shipments from domestic mines began to fall far behind consumption, until in 1950 the difference was nearly 110,000 tons. A variety of reasons might be assigned, such as, competition from imports, gradual depletion of mines, a desire of domestic producers to conserve limited reserves, inability to find economically interesting new deposits, unfavorable price structures, etc. Fluorspar import figures are quite illuminating. Imports in 1942 were only 2,000 tons, but they surged swiftly upward to amount to 105,000 tons in 1945 after which a decided drop occurred in 1946 and then with the exception of a slight dip in 1949, the trend has been upward until 1950 when all records were broken with a figure of nearly 157,000 tons.

Increasing Demands

Hence fluorspar is an industry whose products were already in 1950 being consumed in record quantities, and the prospects for the early future seem to suggest sharply increased demands, particularly when we give attention to such things as the following:

(1) If a 10 percent expansion occurs in the steel industry another 24,000 tons of metallurgical spar might be needed. (2) Government agencies are reported to be setting in motion plans to expand the aluminum industry to consume upwards of another 40,000 tons of acid grade fluorspar annually within the next one to two years. (3) During World War II substantial quantities of hydrofluoric acid were consumed in the production of high octane aviation gasoline. Most of these plants shut down in late 1945, but some are being reactivated and could account for upwards of 20,000 tons of acid grade fluorspar annually. (4) The Munitions Board has announced in recent weeks a program for stockpiling fluorspar. No tonnage objectives have been published, but regardless of how small they may be, that is even if they are equivalent to only a few months supply they will at this time add considerable tenseness to the demands.

Sizeable quantities of fluorspar for stockpiling or for any of the other demands mentioned can become available from domestic sources only through some combination of new deposits, new plant facilities, and a substantially higher price structure.

Price Increases in 1950

During 1950 acid grade fluorspar prices increased about 15 percent, and prices on other grades increased slightly more percentagewise, but no increases of the magnitude occurring in lead, zinc and copper in 1950 have occurred in fluorspar.

Fluorspar is a mineral very much entwined throughout our daily and industrial activities, both in peacetime and in wartime and it needs every possible incentive so that the job confronting the industry at this time can be done. This mineral is indeed a sparkplug of our national life and without adequate quantities of it available, some of our gigantic undertakings, such as aluminum, steel, gasoline, etc. can be handicapped severely.

GOLD

By NEIL O'DONNELL
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The feeling among producers in the gold industry has been one of either frustration, or impending catastrophe during the year.

The first real blow was the untimely death of Joseph Stagg Lawrence, the industry's able young spokesman. Second was the outbreak of hostilities in Korea in June, followed by the preparation for another major conflict, scarcely six years from the end of World War II of unhappy memory. The year ended with reassurances from Congressmen and other political leaders that there would be no reimposition of restrictions such as L-208. These reassurances were not reassuring however, as the country prepared for full scale war. Manpower and material shortages could be as effective in curtailing production as are limitation orders.

Advances in costs of labor and material will adversely effect production in coming months. Already some gold producers have begun to diversify their operations.

Monetary Funds' Control

The control of the future of gold mines is in the hands of the International Monetary Fund, which operates with the advice and consent of the United States Treasury Department.

In the report of the Executive Directors of the Fund for the fiscal year ended April 30th, 1950, the following significant matters were considered in its chapter on "Gold Policy": (1) Flow of gold into private hoards. (2) Resolution introduced by South Africa to permit members to sell up to one half of their newly mined gold in any market. (3) Refusal to adopt South Africa's proposal. (4) A proposal for a uniform change in par values of all currencies (a world-wide gold price increase.) (5) Decision against effecting such a change in par values.

The report has the following to say of gold hoarding: "In spite of the fact that comparatively large quantities of gold have continued to flow into private hoards the amount thus absorbed would probably have been much larger had Fund members and some nonmembers not cooperated toward making this policy effective." In the same paragraph it says that "During the last three years the Fund has received the support of *many* of its members in carrying out its gold policy." The italics are mine. I did not say all of its members.

Premium Markets

As you all recall, Mr. Havenga of South Africa introduced a resolution to sell up to one half of their newly mined gold in premium markets, provided the remainder was sold to monetary authorities or to the Fund. The Fund decided that such a change was undesirable for two reasons. The first was that due to the fact that many countries had large international payment deficits which had to be met by intergovernmental grants and credits, any change in the Funds' gold policy that might divert additional amounts of gold from monetary reserves into private hoards would be undesirable and secondly that the existence of a free market for gold in various parts of the world which dealt in currencies at off-parity rates were of such size that any extension of premium gold transactions would be likely to cause these markets to grow. The Fund says "This would not only be unsatisfactory from the point of view of exchange stability, but would cause a distortion of the normal pattern of trade that might affect adversely the commercial interests of a number of countries."

American producers have been intensely interested in these free markets because they represented a higher price for the commodity they produced. Even $10.00 per ounce would have meant the difference between survival and failure for many. The Funds' answer to this question does not make sense because it assumes that traders would accept currencies at the values the Fund said they had rather than their real value as measured in terms of goods they would buy. The continuance of barter agreements indicate the faith that traders had in these currencies. Free gold markets establish real values for these currencies because the currencies are being traded for gold. The Fund is trying to get the cart to pull the horse.

Mr. Havenga in introducing his resolution for the right to sell part of South Africa's gold in premium markets said that there had been an unwritten agreement among the signatory nations for a uniform increase in the price of gold after the war and South Africa felt the time had arrived for the Fund to meet this commitment. The Fund considered this proposal also and said, "In its view there was no economic justification for recommending such a change to the Board of Governors. Some of the arguments for and against a uniform change were outlined in the Annual Report for the year ended April 30, 1949. It may be noted that, since the publication of the Report, exchange rate adjustments in a large part of the world have materially improved the position of many gold producing nations."

What all this means is that there had

been an unwritten agreement to establish a uniform change in parities (or a world-wide gold price increase), and that the Fund had not lived up to its agreement except to those people who knew of the agreement, i. e., foreign gold producers. The American members of the Bretton Woods Agreement and the American members of the International Monetary Fund have sold American gold producers down the river on two occasions. To some degree this also applies to Canadian gold producers. All of this reminds me of a story of an emigrant from Hitler Germany. When asked by a friend how things were in the old country he said, "Not good, whatever is not forbidden, is compulsory."

Gold producers of the United States extend to the Union of South Africa and Mr. Havenga their thanks for clarifying this particular atmosphere.

Realistic Free Market

The gold producers of the United States still continue the fight for a free gold market as a realistic approach to the problem of determining real values for the world's currencies, values which can be used in day to day commerce in the world. Their view is that due to a gigantic dislocation of the world's business that new bases must be established for world currencies. Once established again, new par values can be determined.

Another group, the Economists National Committee on Monetary Policy, together with the Gold Standard League, proposes immediate return to gold convertibility at the old base of $35.00 per ounce of gold. It is my view and the view of many others outside the ranks of gold producers that the campaign of both these groups for a sound money convertible to gold on demand is a very much worth while project in which not only those interested in gold but every banker, every insurance executive and every man, woman and child that considers the future welfare of the United States should be interested. These gentlemen are willing to concede that the currencies of members nations has deteriorated as the result of war but are unwilling to concede that ours has also. The fact is that our money has deteriorated greatly in purchasing power but considerably less than others, so that it appears as though ours had not.

It is probable that our gold supply will continue to drop during 1951 because of large purchases abroad and a declining export business. Due to our large reserve supply it is doubtful if gold will soon become a strategic metal, however the possibility is there. This alone offers the only ray of hope the gold mining industry can look for although very few of us would like to see our economy reach such a point.

IRON ORE

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In 1950 approximately 98,200,000 gross tons were shipped from the various iron mining districts of the United States. This compares with 84,900,000 gross tons in 1949 and 101,821,000 gross tons in 1948. The 1950 lake shipments from the Lake Superior District increased approximately 8,000,000 gross tons over those of 1949. These shipments would have been considerably larger if it had not been for the unusually late opening of navigation —the first vessel loading at Duluth May 2nd. Likewise the adverse weather in late November and early December further hampered the completion of lake shipments. To augment this retardation of lake navigation, new rail movements were inaugurated. Approximately 280,000 gross tons were shipped from the Gogebic Range to the port of Escanaba, a rail distance of approximately 200 miles compared to the average distance to Ashland of about 40 miles. This movement, when properly coordinated with vessel traffic, saved about two days' shipping time. More important was the all-rail movement of approximately 1,500,000 gross tons by the Oliver Iron Mining Company from the head of the lakes to the Pittsburgh district, a distance of more than 1,000 miles. This movement was equivalent to approximately 150 lake vessel cargoes of 10,000 gross tons each. This all-rail movement of iron ore, which began in midsummer, was temporarily brought to a close with the beginning of winter conditions, mainly because the steel plants were not yet equipped to thaw iron ore on a large scale. The last cargoes were loaded at Duluth and Two Harbors on December 7th.

Increased Production in 1950

Production from all districts increased in 1950 over 1949. Imports likewise increased but exports decreased slightly.

The Lake Superior district again supplied approximately 81½ percent of the total shipments in the United States or almost exactly the same percentage as in 1949. In tonnage the increased shipments from the Lake Superior district in the United States in 1950 over 1949 were mostly accounted for by the Mesabi Range, although the Gogebic, Cuyuna and Menominee ranges all bettered their 1949 record. Of the total from United States ranges, the Mesabi contributed 77.5 percent in 1950 as compared with 76 percent in 1949.

Based on the reserves shown in the 1950 Mining Directory of Minnesota, which are the reserves of Minnesota, Michigan and Wisconsin appraised for taxation, and adding about 150,000,000 gross tons for the Province of Ontario from those properties now shipping to the furnaces of the Great Lakes region, it would appear that there remains about 1,250,000,000 gross tons of ore which include both direct shipping ore and the product of simple beneficiation processes. This is admittedly a very conservative estimate and might be erroneously considered by some to indicate only about a fifteen year life with a future average annual shipment of 80,000,000 gross tons. We say "erroneously" because any consideration of the life of the Lake Superior ore reserves should take into account the possibilities of increases currently brought about by exploration and development and logical expectations from known geological conditions. Estimates made with due consideration of the foregoing in 1950 show about 1,600,000,000 gross tons of which about 600,000,000 gross tons must still be classed as underground ore. The life of the Lake Superior ore reserves also depends upon the rate of which production can be maintained and to what degree the demand for ore will be satisfied by imports and the production of concentrate from the magnetic taconite.

New Openpits Developed

In the past, for both World War I and World War II, the increased demand has been taken care of by larger production from the openpits on the Mesabi Range. On account of the great postwar demand for ore, maximum shipments have continued from the openpits and many of the larger pits are being rapidly depleted. However, it is believed that for a few years the current demand can be satisfied by the development of openpits of lesser size and by the use of larger and more expensive equipment. Properties on the Mesabi and Cuyuna ranges are now being stripped that a few years ago were considered definitely only mineable by underground operations. A good example of such a development is the use of a 30-yard dragline supplemented by thousands of feet of belt conveyor which removed the overburden at the South Agnew mine on the Mesabi Range and is now stripping the nearby Morton mine. Deep shaft developments are being expedited on both the Gogebic and Marquette ranges. On the Gogebic Range a considerable portion of the mining is at vertical depths greater than 3,000 feet and while the workings on the Marquette Range are as yet shallower the new shaft layouts are designed to reach and exceed that depth in the not far distant future.

On the Canadian side of the Lake Superior district developments at Steep Rock have been promising and Steep Rock Iron Mines, Limited, are stripping a second orebody with the expectation of going into openpit production there in a couple of years. Inland Steel Company has reported favorable results from exploration on its lease taken in January 1950 on a section of the property of Steep Rock Iron Mines, Limited.

In the Eastern district Republic Steel Corporation opened a new mine on its Chateaugay property which will be an openpit producer for several years. The Benson mine of the Jones & Laughlin Ore Company made a substantial increase in production and shipments in 1950.

Western Production

In the Western district 4,982,314 tons of iron ore were produced by four companies and their percentages of the production of the entire district are approximately as follows: 35—Columbia Iron Mining Company, producing from Iron Mountain, Utah; 26—Colorado Fuel and Iron Corporation, producing from the Sunrise Mine in Wyoming and Blowout openpit at Iron Mountain, Utah; 17—Kaiser Steel Company, producing from its Eagle Mountain Mine in California, and 14—Utah Construction Company, producing from its Iron Springs property near Iron Mountain, Utah.

All of these companies are either exploring or developing, or both, for larger shipments in the immediate future.

Research Growing

Research on the lower grade iron bearing materials continues unabated in all districts of the United States. Most of the larger mining companies in the Lake Superior District have large independent research laboratories furnished with the latest equipment available. A large amount of this research consists of work on the intermediate ores—that iron-bearing material which is between the unaltered iron formation and direct shipping ore—and from which a suitable product can be obtained without fine grinding. The great problem on the in-

termediate ores is to obtain better recovery in treatment of the fine sizes.

Extensive aeromagnetic surveys were continued during 1950 over areas in Michigan and Minnesota, which eventually may lead to important discoveries but as yet, so far as known, have not disclosed anything of commercial importance.

Considerable progress has been made during 1950 in preparation for the development of foreign ores and the production of magnetic taconite.

Foreign Developments

The Liberian ore deposit in which Republic Steel Corporation has acquired a controlling interest will be ready for production in 1951 with the completion of the unloading docks on the Baltimore & Ohio Railroad at Baltimore, Maryland, and vessels are being built to transport this ore. The 42-mile railroad in Liberia from mine to dock and vessel loading facilities are expected to be completed by mid-summer. Although the proven reserves of direct shipping ore are not extraordinarily large, this ore is of very high grade and suitable for open hearth use.

Shipments by the Bethlehem Steel Company from mine-to-dock in Venezuela began in October and are expected to continue at the rate of about 2,000,000 to 3,000,000 gross tons per year. This, too, is a high iron content ore carrying a small amount of moisture.

The U. S. Steel Corporation continued plans for development of its Cerro Bolivar property in Venezuela, now estimated to contain 500,000,000 gross tons of proven ore with possibilities of three times that amount. This ore is expected to analyze about 58.40 percent natural iron.

The M. A. Hanna Company has announced complete plans for financing the Labrador-Quebec iron ore deposit, sometimes referred to as the Ungava trough, and contracts have been let for the building of the 360-mile railroad and dock facilities at Seven Islands on the St. Lawrence River. This enterprise will be operated by the Iron Ore Company of Canada in which National Steel Corporation, Republic Steel Corporation, Youngstown Sheet & Tube Company and Wheeling Steel Corporation participate in the ownership. The proven ore in Iron Ore Company of Canada's holdings, estimated to exceed 350,000,000 gross tons, is of Mesabi type and of three grades, Bessemer, Non-Bessemer and manganiferous.

Taconite

Increasing interest is evidenced for the early production of magnetic taconite concentrates. Taconite is the name given to all the iron formation of the Mesabi Range. A substantial amount of this taconite is unaltered iron formation in which the iron bearing mineral is very finely disseminated magnetite. The Adirondack operations in New York state have developed the flow sheet for magnetic separation which is largely applicable to the magnetic taconites except that the latter requires much finer grinding and consequently the milling will be much more expensive, not only in operating expense but for capital as well. The agglomerated product is expected to analyze 65 to 60 percent natural iron, depending on whether or not the magnetite is converted to hematite in the agglomerating process. The Erie Mining Company, owned largely by Bethlehem Steel Company and Youngstown Mines Corporation and managed by Pickands, Mather & Company, continued the operation of a pilot plant in the Aurora district of the Mesabi Range. Shipments of the pelletized product have been made to blast furnaces where tests were said to have shown favorable results. Reserve Mining Company, owned by Armco Steel Corporation, Republic Steel Corporation and National Steel Corporation and for which Oglebay, Norton & Company is Agent, has announced plans for rehabilitation of the old Mesabi Iron Company plant situated near the mine at Babbitt, Minnesota. It is the expectation that this pilot plant project will be ready for operation at the end of 1951 on a rated production scale of about 300,000 gross tons per year of agglomerated product. In the meantime, through 1950, the pelletizing pilot plant situated in Ashland, Kentucky, and operated under the management of Oglebay, Norton & Company, has continued its research on the making of pellets suitable for blast furnace use. This plant is rated at about 200 tons per day and sufficient pellets were accumulated for blast furnace tests in one of the furnaces of Armco Steel Corporation with results which were said to be satisfactory. The Oliver Iron Mining Company, during the year, erected and completed a rather large scale pilot beneficiation and agglomerating plant at Virginia, Minnesota. This plant will be suitable for agglomerating tests on all fine ores as well as taconite concentrates. Bethlehem Steel Company, mostly from its Cornwell, Pennsylvania, operation, is likewise agglomerating fine ores by the pelletizing method. The great interest exhibited in pelletizing of fine magnetite is brought about by the generation of heat in the process, which indicates a good possibility that this process for very fine ore will be much cheaper than sintering.

Taconite by 1955

Today there seems to be no question but what the magnetic taconites will be successfully treated. The handling of the production over existing railroads and by existing fleets on the Great Lakes eliminates transportation problems and large expense characteristic of the foreign ore deposits. A large part of the equipment necessary to mine taconite is the same as is already being used on the Mesabi Range. The shift over to taconite can be made from openpits producing direct shipping ore with men trained or now in training and with little change in living conditions for people accustomed to living in northern Minnesota. Cost estimates, based largely on large scale operations elsewhere in the United States, indicate that the taconite agglomerate will be competitive with foreign ores of the impending large scale developments. It is expected taconite shipments will be inaugurated about 1955 and within a decade or two will be built up to an annual production of 25,000,000 to 40,000,000 gross tons.

With the coming of taconite concentrate production, supplemented by imports, the Lake Superior Region has an indeterminately long life ahead and with the avoidance of governmental interference the iron ore industry should meet the short and long term future demands of the steel industry, probably without governmental financial assistance.

LEAD

By GEORGE MIXTER
Executive Vice President
United States Smelting Refining and Mining Company
Boston, Massachusetts

The lead market entered 1950 shaken by the most abrupt price decline in its history from 21½ cents to 12 cents per pound and beset by the uncertainties that the nonferrous metals industry, in common with most business in this country, faced at the beginning of the year. Its position was weakened by the resulting falling off in consumer demand and by the continuing flood of imports of foreign metal and ores, which had been touched off by the epidemic of currency devaluations in 1949 and by the hunger for dollar exchange in many producing countries whose output normally found its market abroad. By March the price of lead had fallen to 10½ cents per pound.

Estimated Lead Supplies Available to United States Markets During 1950 in Tons

Source	Tons
Domestic mine production	430,000
Domestic secondary production	365,000
Refined lead imports	442,000
Production from foreign ores and base bullion	79,000
Production from imported scrap	30,000
Estimated decrease in smelters' stocks	60,000
Total	1,406,000

By that time inventories in the hands of consumers had been reduced to a minimum and the market recovered slightly and thereafter remained relatively stable until mid-June when the price was quoted at 11½ cents per pound. The outbreak of hostilities in Korea brought back into the market many consumers who had reduced their inventories to low levels and lead prices strengthened throughout the summer and early fall, reaching 17 cents per pound at the end of October. In spite of continued heavy demand during the remainder of the year, this price was not exceeded up to the time of the Government order freezing prices in January 1951. It is to be noted that the price at which lead is frozen is 4½ cents below the high recorded in 1948, in spite of the great increase which has since taken place in labor and other costs. This situation is

Estimated United States Lead Consumption During 1950 in Tons

Use	Tons
Storage batteries	405,000
Cable covering	140,000
Tetraethyl lead	110,000
Miscellaneous industrial uses	555,000
Increase in consumers' inventories	16,000
Total	1,226,000

similar to that which existed during the Second World War when nonferrous metal ceiling prices were unrealistically set far too low in comparison to costs and prospecting for the new properties constantly needed to keep the mining industry in a healthy condition was discouraged.

Imports Soar 36 Percent

Although the production of lead by a number of domestic mines was increased markedly in 1950—in some cases as much as 50 to 100 percent—as the result of increased plant capacity or the drawing down of reserves developed in prior years, or both, nevertheless, the loss of output of properties, which with present inflated costs could not operate at a profit on eleven and twelve cent lead and of those which were shut down for varying periods by work stoppages and other misfortunes, limited total domestic mine production to an increase over the previous year of less than five percent. Imports, on the other hand, soared 36 percent above the record total of 1949. While the tonnage of lead derived from foreign ores and scrap was somewhat less than domestic mine production in 1949, it exceeded it by almost 30 percent in 1950.

The difference in supply and use, about 180,000 tons, represent purchases for the government stockpile and an increase in miscellaneous inventories.

While lead is not in as short supply as either copper or zinc and it appears improbable that the Government will feel it necessary to resume purchases for the stockpile, demand remains heavily in excess of the supply. If this condition continues, it is quite possible that within a few months lead too may be in a critical position. Domestic producers whose price is frozen must continue to sell their production at 17 cents per pound while imported lead is selling at 18½ cents per pound, the difference being a little more than the increase in the lead tariff which became effective January 1, 1951 upon termination of the Mexican Trade Agreement. This is hardly the result which a tariff is supposed to produce but in the present tight market consumers are willing to stand the addition of 1½ cents per pound in order to obtain supplies.

Encouragement of Exploration

In this country the original purpose of the tariff was to protect "infant industries." Today most of our industries have long since emerged from their infancy and it is now the essential "wasting-asset" industries, like mining, that even in periods of strong demand need tariff protection to enable them to maintain a high level of efficiency for the production of the raw materials urgently required in times of national emergency and danger such as we face today. It is to be hoped that the present agitation for reduction or elimination of the tariff on imported lead will not be successful, that such control over the market as may be deemed necessary to insure adequate supplies for the rearmament program will be intelligently and conscientiously administered and that the new tax laws, which will be enacted to raise the vast sums which it calls for, will not discontinue the special treatment heretofore accorded the mining industry because it deals with wasting assets, but will rather recognize the soundness of the tax provisions recommended by the National Minerals Advisory Council and the American Mining Congress, so that active exploration for and development of new sources of strategic metals may be encouraged.

MANGANESE

By J. CARSON ADKERSON
President
American Manganese Producers Association
Washington, D. C.

Without manganese there can be no steel. There is no substitute for manganese in the manufacture of steel. If our manganese supplies were cut off our steel mills would close. "I feel that if . . . we do not have a vigorous start on accelerated domestic production," warned Bureau of Mines official, Elmer W. Pehrson, recently, "we might as well acknowledge . . . the war is over."

The Unitel States has no "vigorous start" on domestic production. Our stockpiles are limited. Some major steel furnaces are already operating on a hand-to-mouth basis. Manganese is elusive, unpredictable. The word manganese is derived from a Greek word meaning "delusion," "mystification." The characteristics of the ore emphasize the meaning of the name.

Russia's Token Shipments

Today Russia is using a hide-and-seek strategy in making "token shipments" of manganese to the United States. Now you see it—now you don't. This is purposely aimed to confuse us; to keep us from going full steam ahead with our own developments. For years we leaned on Russia for the bulk of our manganese ore. In 1949 she slowed down shipments to a dribble. She simply put the squeeze on us. As far back as 1927 I warned that this would happen; that Russia was using cheap manganese as a strategic and political weapon to make us dependent on her and stifle U. S. production. But nobody listened, even when Russia dumped manganese here in depression years. Instead, the United States cut the manganese tariff in half in 1935. In 1948 the tariff was halved again. Most U. S. mines were abandoned and allowed to collapse. Of more than 100 mines under development in 1930, less than a dozen were still open when war broke out. Of 131 wartime mines operating in 1944, only 10 were open in 1946. Most producers had the markets withdrawn without warning and were left holding the bag. Many lost their shirts and have never been paid even their cash expenditures. On account of unfavorable government policies they are afraid to stick their necks out again

Production Increases Reserves

Some 27 states possess manganese deposits, most undeveloped. Development and production increase rather than deplete our known reserves. At the beginning of World War I, in 1914, our total known reserves of manganese ore in the ground was less than 1,000,000 tons. Since 1914 we have mined and shipped more than 2,500,000 tons of high grade ore (35 percent Mn and above) and more than 7,500,000 tons of low-grade ore (10 to 35 percent Mn) from this 1,000,000 ton reserve. More than 10,000,000 tons shipped and our indicated reserve has been multiplied more than a hundredfold. But ores conserved in the ground are of little or no use in an emergency.

If and when Russian submarines cut our sea lanes we would be compelled to fall back largely on our stockpile and domestic production.

The answer is to build beneficiation plants to produce high-grade manganese from our larger, known deposits of low-grade ores and to start numerous small mines producing suitable low-grade ores for later treatment at plants to be centrally located in manganese areas in the United States. Action should be speedy, positive and lasting. The big question is TIME.

MOLYBDENUM

By C. M. LOEB, JR.
Vice President
Climax Molybdenum Company
New York, New York

Climax Molybdenum Company increased its activities in the development of its mine at Climax, Colorado, during 1949 and 1950. Any increase in the amount of molybdenum available to industry appears to be largely dependent upon the rate at which this company can further develop its mine and increase its milling capacity.

Production, Shipments and Exports of Molybdenum in 1949 and 1950 Measured in Pounds

	1949	1950[1]
Production	22,530,000	30,000,000
Domestic shipments	17,900,000	31,000,000
Export	5,319,780	8,000,000
Total shipments to conusmers	23,219,780	39,000,000

[1]Estimated

The demands of the Government for defense have created a situation where molybdenum has had to be put under Government control. This has been done by National Production Authority Order M-33.

In view of the beneficial effect of molybdenum in so many vital applications for defense, there is little hope that the supply situation as regards molybdenum will ease up during the period of all-out defense effort.

NICKEL

By DR. JOHN F. THOMPSON
President
International Nickel Company of Canada, Ltd.
Copper Cliff, Ontario

Despite the fact that nickel was in tight supply during the latter half of this year, the amount available for distribution and Governmental stockpiling in 1950 was the largest for any peace-time year in the history of the nickel industry.

Nickel output by the Canadian producers, International Nickel and Falcon-

bridge Nickel Mines Limited, for the year 1950, was about 250,000,000 pounds.

In the latter part of June, prior to the Korean conflict, when it became apparent that the demand for nickel would exceed the available supply, a voluntary rationing program was put into effect. Although nickel, like other metals, remains in tight supply, military requirements are being met in full and shipments are being made to Government stockpiles. The trade's civilian requirements continue, however, to take the major portion of the world's supply.

Key Defense Metal

In the United States on December 2, 1950 an order was issued by the National Production Authority limiting the nonmilitary consumption of nickel in the first quarter of 1951 to 65 percent of the average quarterly rate of consumption during the base period comprising the first six months of 1950. The order was stated to be designed to maintain equitable distribution, through normal channels, of that amount of primary nickel remaining after meeting the requirements of the national defense.

Canada, the world's predominant producer of nickel since the early part of this Century, continued to furnish the industrial world with the major portion of its requirements. This year's nickel output from the French New Caledonian deposits is reported to have been sufficient to meet the requirements of French industry. No information is available on Russia's 1950 production of nickel. In September it was reported that the United States Government was planning to reactivate its idle nickel facilities at Nicaro, Cuba, which were closed early in 1947. The production of this plant for the preceding year, 1946, was reported at approximately 25 million pounds.

Nickel alloy steels, including those containing chromium and molybdenum, were employed in large tonnages during the year. These steels find applications in essential constituent parts, such as shafting, gears, structural tubing and heavy springs, for the aircraft, automotive, agricultural machinery, machine tool, mining, petroleum, railroad and other industries.

The huge expansion of the television industries of the United States and Great Britain brought a greater demand for nickel and various nickel alloys. These materials found extensive applications in various components of both transmitting and receiving equipment.

OIL SHALE

By BOYD GUTHRIE
Chief
Oil Shale Demonstration Branch
U. S. Bureau of Mines, Rifle, Colorado

An oil-shale industry was brought a significant step closer to reality in 1950 with progress in all three major phases of operations—mining, retorting, and refining. The estimated cost of mining the shale was reduced from 58.5 to 42.6 cents a ton, an improved retort for extracting the oil from the rock was developed, and refining methods by which good yields are obtained at a reasonable cost were demonstrated.

Work at the U. S. Bureau of Mines' experimental oil-shale mine near Rifle, Colorado, during 1950 consisted largely of research investigations into all phases of the mining operations, with emphasis on drilling and blasting. Based on new data made available by this research, a lower cost estimate and recommendations for improved mining techniques were made.

Drilling Research

Percussion drilling research has led to a reduction of a cent a ton in operating costs, principally by increasing the drill-rod life through improvements in heat treating. Comparative tests of numerous types of percussion drill bits led to the selection of one that has drilled over 1½ miles into oil shale.

Experiments with a rotary test drill developed by the Bureau at Rifle have shown that the success of this method of drilling will depend primarily on development of a satisfactory bit. The experimental work is yielding data which it is hoped will serve as the basis for design and manufacture of a bit having the desired characteristics. If a successful bit can be developed, the application of rotary drilling to oil shale may result in appreciably lowering the cost of mining.

Three types of blasting research have been conducted: Instrumented blasting experiments for studying millisecond detonation, depth of destructive penetration, and amount of dynamic strain developed in rock at various distances from the explosive charge with different types of explosive and loading procedures.

To the specialized equipment developed during earlier years at the Bureau's oil-shale mine—for example, the drilling jumbos, electric shovel, mobile compressor station, and scaling rig—three new units of auxiliary equipment were designed and constructed this year. These are: (1) A Diesel-powered conveyance for transporting explosives to the underground working places, (2) a Diesel-powered water truck equipped with a 1,300-gallon flat-bedded tank and a 50-g.p.m. pump for wetting down piles of broken shale, sprinkling haulageways, transporting water to the mobile compressor station (which supplies water under pressure for drilling), and pumping water from underground sumps, and (3) a portable electric substation that provides switching equipment, low-voltage and overload protection, and transformer facilities at remote places in the mine.

New Mining Cost Estimate

A new estimate of the cost of mining the Mahogany ledge of the Green River formation on a commercial scale was made and is based on mining 19,200 tons of oil shale per calendar day from one of a number of possible sites in the Rifle-DeBeque area of western Colorado. The site has an area of 1.4 square miles and would supply a 11,700 barrel-per-day processing plant for 20 years. According to the estimate, the mine could be developed to full production in about 18 months, and the total capital expenditure would be $4,750,000.

The estimated cost of mining, crushing, and conveying the shale to the retort stockpile is 42.6 cents a ton. The estimate includes management, depreciation, taxes, and insurance but does not include depletion, interest on investment, profit, or expenditures for off-site facilities.

PHOSPHATE

By LOUIS WARE
President
International Minerals and Chemical Corp.
Chicago, Illinois

Mineral phosphate in the U.S.A. during 1950 continued to be mined in three areas: Florida, Tennessee and the Northwestern States.

Mining companies in the Florida field were: The American Agricultural Chemical Company; American Cyanamid Company; Coronet Phosphate Company; Davison Chemical Corporation; International Minerals & Chemical Corporation; Swift & Company; and Virginia-Carolina Chemical Corporation.

Mining companies in the Tennessee field were: Armour Fertilizer Works; Federal Chemical Company; Hoover & Mason Phosphate Company; International Minerals & Chemical Corporation; Monsanto Chemical Company; Tennessee Valley Authority; and Virginia-Carolina Chemical Corporation.

Mining companies in the northwestern states were: Anaconda Copper Mining Company; San Francisco Chemical Company; T. R. Simplot Fertilizer Company; and Montana Phosphate Products Company.

Production in 1950

Of the 9,000,000 tons shipped in 1949, 1,300,000 tons were exported to other countries. It is estimated that in 1950, due to uninterrupted labor conditions on the one hand and larger demand because of increased phosphoric acid production and larger exports, total production will have increased to about 9,900,000 tons (Florida 7,500,000, Tennessee 1,500,000 and northwestern states 900,000 tons).

For 1951 phosphate miners expect a continuous growth of their industry. One factor that could conceivably retard this progress is the shortage of sulphur that has developed, a material which, after conversion into sulphuric acid, is essential to the manufacture of superphosphate. Another factor is the sudden unprecedented advance in ocean freight rates which might seriously curtail export shipments from the Florida mining field.

A compilation by the U. S. Bureau of Mines shows the average 1949 price per long ton of phosphate rock at the mine as $5.72, a slight reduction from the average price in 1948 which was $5.83. Due to increased labor and other production cost, there was a tendency toward moderately higher prices in 1950.

Growing U.S.A. Production

Total world shipments of phosphates in 1949 amounted to 20,000,000 tons, an increase of 600,000 tons over 1948. It is estimated that in 1950 a total of 21,000,000 tons will have moved. Comparing this figure with that of 1938, the last full prewar year, i.e., 12,000,000 tons, an increase of 75 percent will be noted. In 1950, participation by the U.S.A. in world tonnage was close to 50 percent, while in 1938 her share was only 31 percent. These comparisons show the increasing importance of phosphate in world markets in general and the outstanding position of the U.S.A. in particular.

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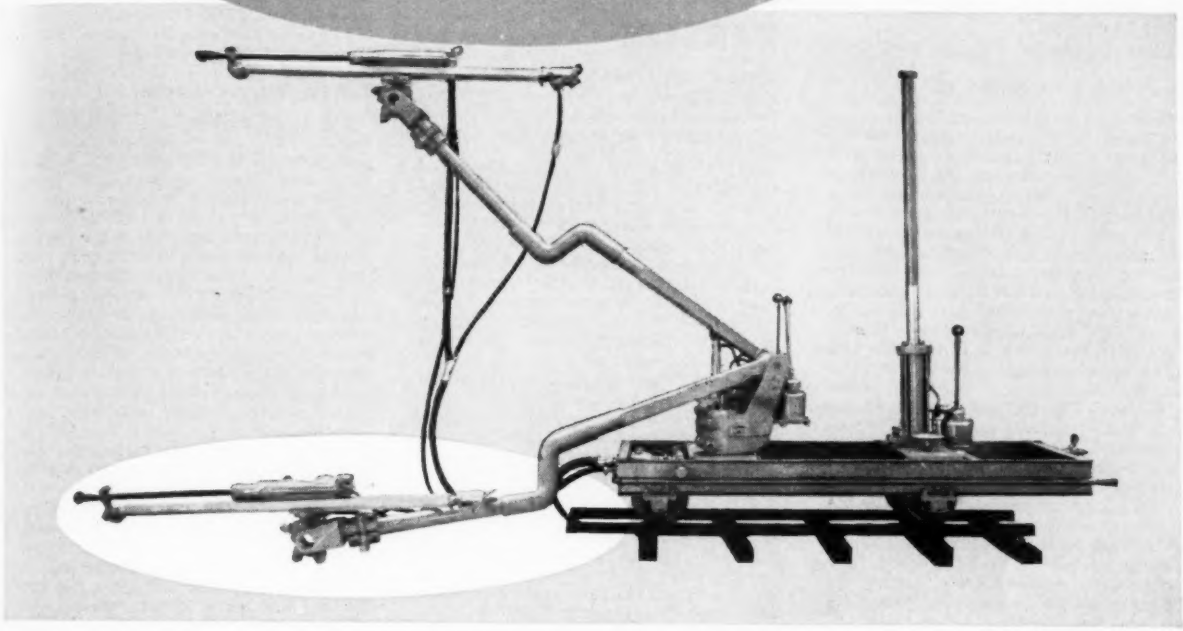

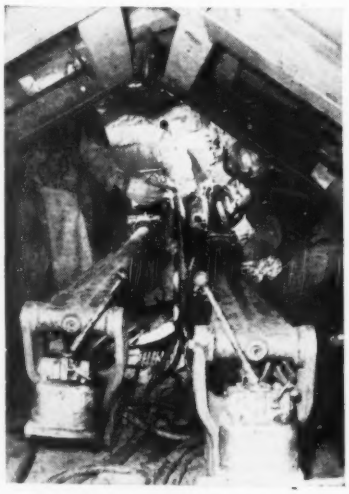

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POTASH

By H. B. MANN
President
American Potash Institute, Inc.
Washington, D. C.

American potash production reached an all-time high in 1950. This was accomplished in spite of a strike of the miners in the Carlsbad, New Mexico, area during January.

Deliveries Increase in 1950

Deliveries by the five leading American producers in 1950 were 1,255,218 tons K_2O as compared with 1,105,667 tons K_2O in 1949, or an increase of 13.5 percent. A breakdown of this tonnage shows that deliveries for agricultural purposes in Continental United States for 1950 from American production were 1,077,943 tons K_2O, an increase of 123,001 tons over the previous year. In addition, shipments to Puerto Rico were 22,843 tons and to Hawaii 13,430 tons K_2O. Exports to Canada were 38,971 tons and to Cuba, 5,370 tons K_2O. Other exports amounted to 16,313 tons K_2O.

Deliveries for chemical purposes in 1950 were 80,347 tons K_2O. Of the 79,970 tons delivered in the United States 75,754 tons were in the form of muriate of potash and 4,216 tons as sulphate of potash. Chemical grade shipments to Canada amounted to 357 tons K_2O as muriate of potash and 20 tons K_2O as sulphate of potash.

Although complete figures on imports are not available, preliminary data indicate that in 1950 imports amounted to around 200,000 tons K_2O. They came from France, Spain, Eastern and Western Germany, and Palestine. These were the highest imports since 1938.

Combining American production and imports, approximately 1,455,000 tons K_2O were delivered in North America in 1950. This is a three-fold increase during the last 10 years.

Five Leading Producers

At present there are five leading producers of potash in the United States. The Potash Company of America, the United States Potash Company, and the International Minerals and Chemical Corporation located in the Carlsbad, New Mexico, area ship about 85 percent of the United States production. Two companies are located outside of the Carlsbad, New Mexico, area—the American Potash & Chemical Corporation at Searles Lake, California, and Bonneville, Limited, at Wendover, Utah. Small quantities are produced also in Michigan and Maryland.

During 1950 two new companies, the Duval Sulphur and Potash Company and the Southwest Potash Company, started construction of new mines and plants in the Carlsbad area. These companies are expected to be in production by 1952, each with an estimated annual production of 200,000 tons K_2O.

The major producers of potash salts in the United States market five grades for agricultural purposes and two grades for the chemical industry. Of these over 90 percent goes to agriculture and less than 10 percent to the chemical trade. Agricultural grades include 50 and 60 percent muriate of potash which are about 79 and 95 percent pure potassium chloride, manure salts analyzing 20 to 25 percent K_2O, sulphate of potash which usually runs about 50 percent K_2O, and sulphate of potash-magnesia analyzing about 22 percent K_2O and 18.5 percent MgO. The principal agricultural grade is 60 percent muriate, comprising about 86 percent of the total. Of the remainder of the agricultural deliveries, the 50 percent muriate makes up 6 percent manure salts less than 1 percent, and the two sulphates about 7 percent.

PERLITE

By E. P. CHAPMAN, JR.
and JOHN A. WOOD
Consulting Engineers
Albuquerque, New Mexico

During 1950 the perlite industry strengthened its position in plaster and concrete aggregate and continued intensive research into many other fields of use. ASA specifications, A 42.1, for plaster aggregate and ASTM specification, C-130, for lightweight concrete aggregate were set up. Both were approved by the Perlite Institute at its September meeting in St. Louis, Missouri. Sixty five expanding plants were in operation throughout the country. Several plants mined, crushed and sized their own crude material, but the major portion of sized, raw furnace feed came from four deposit and sizing plants: Dant and Russell, Inc., St. Helens, Oregon; Panacalite Division, Combined Metals Reduction Company, Castleton, Nevada; AleXitE Engineering Company, Florence, Colorado and Great Lakes Carbon Corporation, Socorro, New Mexico. Crude production for the year was approximately 80,000 tons from which some 15,000,000 cubic feet of expanded products were produced.

The Perlite Institute, with offices at 35 West 53rd Street, New York 19, New York, is made up of 36 members of the perlite industry in 19 states with one in Canada. Meetings of the Institute were held during 1950 in Los Angeles in March and in St. Louis in September. At the Los Angeles meeting a comprehensive research program into the basic factors involved in proper gradations of perlite aggregate for lightweight concrete was authorized. This work is being carried forward by the Pierce Foundation under the supervision of E. O. Anderegg, and is progressing rapidly. Institute secretary is Wharton Clay, and a wide variety of information concerning perlite is available at his office in New York.

During the year Great Lakes Carbon Corporation completed and placed in operation its modern crushing and sizing plant at Socorro, New Mexico. AleXitE Engineering Company completed a similar plant at Florence, Colo. Panacalite's Castleton, Nevada, plant underwent certain revisions and improvements. All three of these plants, which together supply the major portion of the processing industry with crude material, utilize impact type crushers which produce superior particle shape with a minimum of fines loss.

Perlite—Strategic Material

The development of the perlite industry since its inception in about 1940 through 1949 was taken largely with perfecting processing techniques and establishing uniform products to meet exacting specifications of the building industries. In fact, the word perlite has come purely and simply to mean a building material. However, 1950 saw wide diversification in use and a number of new applications which bid fair to give perlite an important part as a strategic mineral in the present emergency.

Some of these applications are: (1) In oil well cementing to conserve cement; (2) In oil well slurry to prevent lost circulation; (3) Oil well acidizing; (4) Construction of temperature and shock resistant structures such as bomb shelters; (5) Loose fill insulation for rockets, airplane firewalls, liquid oxygen, packaging delicate instruments, etc.; (6) Filtration; and (7) Fireproofing.

Oil Well Uses Varied

The use of perlite in oil well cementing cuts the use of cement nearly in half, prevents the loss of slurry to thief formations, facilitates control of slurry weight and makes it possible to cement complete pipe strings as well as to shut off salt and fresh water from the surface to the pay section. Perlite's use with acid makes possible production from zones not responsive to normal acidization treatment. Wells may be treated by selective acidization using perlite to seal the more porous zones and thereby force the acid into thicker zones of low porosity where it is needed. One typical example is a West Texas well which had been acidized in the regular manner and would produce only five barrels per day. Perlite and acid were tried and production rose to 400 barrels per day.

For use in temperature and shock resistant structures, results of experiments with perlite concrete have been highly successful. A perlite concrete can be made having a 35 pound per cubic foot dry weight and a 28 day compressive strength of 500 to 600 pounds per square inch, a "K" factor of 0.85 and a "U" factor of 0.070 on a 12-inch wall. This concrete is resilient and will absorb tremendous shock without shattering.

During 1950, the perlite industry definitely moved out from and beyond the limiting bounds of the building trades and established itself in new fields. Working from a sound base with continued experimentation and research, this new industry should continue to grow and occupy an increasingly important position in the mineral world.

PLATINUM

By C. W. ENGELHARD
President
Baker & Co., Inc.
New York, New York

The demand for platinum metals in 1950 was at a high level, and their increased use for industrial purposes demonstrates the economic advantage of using precious metals to obtain extraordinary performance.

Many Catalytic Uses

The economic advantage being obtained from use of precious metals is illustrated by a recent development in production of gasoline. High octane fuel is now made, at low cost, from natural gasoline by means of a platinum catalyst. Use of the process is being extended by construction of several new plants to supplement those already in operation. This important development is based on the

economic advantage of the platinum catalyst.

The chemical industries are using increasing quantities of platinum metals. There is a growing preference for platinum-rhodium spinnerets used in producing synthetic fibers for clothing, tires and other purposes. Gauze made of platinum-rhodium alloy is the catalyst for production of nitric acid, a basic material in the explosive and fertilizer industries.

In addition to its use in jewelry, palladium serves the public in many ways. This important platinum metal is used extensively for electrical contacts in numerous automatic controls and devices that serve us each day.

Rhodium is being used increasingly for finishing articles by electro-plating. Rhodium-finished metal reflectors, capable of withstanding heat and sudden temperature changes, are used in projectors and for other purposes.

U.S.A. Largest User

The United States is the principal consumer of platinum metals, exceeding all other countries combined. Its requirements are met mostly by importation. For the first nine months of 1950, United States imports amounted to approximately 300,000 ounces of unmanufactured platinum metals, including 185,000 ounces of platinum, which compare with approximately 150,000 ounces and 90,000 ounces, respectively, for the corresponding period of 1949.

The price per ounce of platinum declined early in the year to $66.00 and then rose to a peak of $103.00 from which it declined to a $90.00 price in late December. Iridium fluctuated considerably during the year but at year's end the retail price was around $200.00, somewhat below the peak. Ruthenium was quoted at about the platinum price. Rhodium has been rather steady throughout the year at approximately $125.00, and palladium has been steady at $24.00.

More and more people are recognizing how useful the platinum metals are in our daily life. The platinum metals are performing important services in our industries as well as in our scientific and artistic activities.

QUICKSILVER

By J. ELDON GILBERT
Manager
Cordero Mining Company
San Francisco, California

The domestic quicksilver industry virtually died in 1950. Quicksilver was one of the first metals mined in the West and for over 100 years has been actively produced.

Prior to World War II the rate of production was 17,000 flasks per year, while during World War II it rose to a peak rate of 60,000 flasks. During this period 197 mines were in operation. At the close of 1950, only one was trying to stay alive. The others were all closed.

One Mine Operated All Year

Since World War II the price has been constantly depressed by imports from abroad. Foreign producers were stimulated by a thirst for American dollars, cartel controlled prices and markets and the absorption by our Government of excess production for stockpiling in return for Marshall Plan aid. The domestic producer could not meet these constantly dropping prices and one by one they gave up hope of a turn of events or of encouragement from our own Government. At the beginning of 1950 there remained only three mines operating, each losing money. In February the Cordero mine, Humboldt County, Nevada, was shut down. The pumps were removed and the lower levels allowed to flood. By the end of the year the lower section of the shaft had caved and the rest was badly in need of repair. On July 1, 1950 the New Idria mine in San Benito County, California, after a year and a half in trying to keep open, suspended operations and the underground workings were allowed to go to pieces. At the end of the year the Sonoma mine, Sonoma County, California, was the only one left.

Domestic Production Down

Even though the price advanced from $70.00 per flask in July to $150.00 by the end of December no mines went back into operation. In fact, the production rate dropped during this period from 4,400 flasks per year to about 1,600 flasks per year.

Further statistics for the year of 1950 show a feeble production of about 4,500 flasks with a consumption of 45,000 and imports of 52,500 of which about 10,000 went into the hands of speculators.

After operators look over their caved workings, dismantled equipment, dispersed organization, increased costs and the threat of unregulated imports from abroad, they agree it will take considerably more than a price of $150.00 to start them operating.

SILVER

By E. W. CONRAD
President
American Silver Mining Co.
Spokane, Washington

The year 1950 was marked by several important developments in silver. Most significant was the sudden change in the silver situation from one of over-supply which had existed generally since 1946. Stepped up defense plans stemming from the Korean war boosted demand for silver among regular users and those seeking it as a substitute for metals coming under federal allocations. This added demand brought a substantial increase in the New York silver quotation and at year's end foreshadowed the dramatic jump to 90.16 cents an ounce early in January 1951.

World Production Up in 1950

World production of silver increased substantially in 1950 and domestic mine output spurted to the highest point since 1942. Consumption of silver by arts and industries reached a post-war high. Imports of silver also were at a post-war peak and exceeded exports by 134,400,000 ounces. Minting of silver coinage by foreign countries decreased sharply. Demonetization continued in England and India. In Europe, only Sweden and Belgium were reported to have minted silver coins during the year. Only Mexico continued minting silver coins on an important scale.

Demand for silver increased steadily throughout 1950 and the world price, as established by Handy & Harmon in New York, advanced from 73½ cents at the beginning of the year to 80¼ cents at the end. Low for the year was 72 cents on March 30. The price range in 1949 was from 70 to 73¼ cents. The start of the Korean war and growing inflation had little effect on the price structure. Only five price changes were recorded during the year. The only significant advance, from 73 to 80¼ cents, came late in October. This resulted from an announcement by Mexico that it could no longer make sales from its accumulated stocks because of its silver coinage requirements and was limiting foreign silver sales to current output. In March the Mexican government prevented the price from dropping below 72 cents by declaring an embargo on further exports of silver. As in other recent years Mexico played a dominant role in the New York silver market. Handy & Harmon estimated that purchases and sales by the Bank of Mexico were about equal in 1950 and that its holdings at the end of the year were about 42,000,000 ounces.

World silver production in 1950 increased 7,600,000 ounces to an estimated 157,200,000 ounces from 149,600,000 ounces in 1949. Production outside the United States was estimated at 115,000,000 ounces and foreign industrial consumption at nearly 150,000,000 ounces. Thus, it appeared that any expansion in foreign demand would have to be satisfied, at least in part, from U.S. production. Mexico led the world in silver output last year with 47,000,000 ounces. The United States produced approximately 42,000,000 ounces, Canada 21,500,000, Peru 10,500,000 and Bolivia 5,700,000. The United States showed by far the largest production increase, more than 7,000,000 ounces.

Domestic production of silver in 1950 was up 22 percent to 42,419,129 fine ounces, according to preliminary figures. The 1949 figure was 34,674,952 ounces.

Domestic consumption of silver in 1950 was reported up approximately 33⅓ percent from 1949 to a new post-war high of 120,000,000 ounces. This compares with 90,000,000 ounces in 1949 and 110,000,000 in 1948, the previous peacetime high. The silverware manufacturing industry was credited with accounting for the major portion of the increased consumption.

Imports of silver reached a post-war high, estimated by Handy & Harmon at 139,300,000 ounces. This compares with 103,200,000 ounces in 1949 and 95,900,000 ounces in 1948. Nearly three-fourths of the 1950 imports came from western hemisphere countries. Mexico supplied 45,100,000 ounces, nearly one-third of the total U.S. imports. Cuba was second with 21,800,000 ounces, followed by Canada with 13,100,000, Spain with 9,800,000, Peru with 9,500,000, China and Hong Kong with 6,500,000, the Netherlands with 5,300,000, Bolivia with 4,600,000, Japan with 3,600,000 and the United Kingdom with 3,200,000. Demonetized coinage accounted for an estimated 37,300,000 ounces of the total silver imports. Cuba, Spain, Yugoslavia and China were among countries making these shipments.

Exports of silver dwindled to only 4,900,000 ounces in 1950 because of a lack of coinage orders from foreign governments. In 1949, silver exports totaled 33,400,000 ounces. Largest 1950 shipment was 2,000,000 ounces to Germany. This compares with 22,660,000 ounces shipped to China in 1949. The Chinese Red government has since forbidden importation

of silver and demanded surrender of privately held silver.

The United States Treasury reported silver holdings of nearly 2,000,000,000 ounces at the end of 1950. The total included 1,578,336,374 ounces of silver bullion, 241,905,925 ounces of silver in the form of silver dollars and 159,774,512 ounces of "free silver." The silver bullion figure included 401,971,068 ounces given out during World War II to various government agencies and still held by them. The "free silver," that not earmarked as backing for silver certificates, decreased 11,685,995 ounces during the year. A 10-year trend of silver dollars out of the Treasury was reversed following passage of the law banning interstate shipments of slot machines and the Treasury supply had increased by about $200,000 by year's end.

Eastern Foes of Silver

Eastern foes of silver were more vociferous in 1950. Early in January a subcommittee of a congressional joint committee on economic report recommended that the federal government stop buying silver for monetary purposes. Senator Theodore Green (D.-R.I.) introduced a bill to repeal all silver legislation of the last 16 years. Late in January Senator Paul H. Douglas (D.-Ill.), a member of the joint committee on the economic report, created a furore in silver mining circles when he was quoted by news services as having said, "There are only 16 reasons for the silver subsidy—the 16 senators from the western mountain states." In June, anti silver articles appeared in several national magazines.

Silver's Friends Strike Back

Silver's friends struck back hard. Representative Baring (D.-Nev.) was quoted in press dispatches from Washington, D.C., as asserting that under the silver purchase act the silver miner subsidizes the government. Every ounce the producer sells the treasury at 90 odd cents an ounce becomes worth $1.29 when coined into dollars, he pointed out. The same argument and others were used in press statements by many westerners, including Roger O. Oscarson, secretary of the Northwest Mining Association; Frank Lilly, Spokane mining statistician and president of the American Hard Money Association, and Paul H. Hunt, president of the Utah Mining Association. Hunt added that the silver purchase act has resulted in lower costs to consumers of lead and zinc amounting to many millions of dollars. He asserted that four of Utah's major mining companies would go broke if the 1934 act were repealed. Oscarson said the magazine articles appeared part of a planned attack on silver. Lilly charged that an article by Jerome Beatty in **American Magazine** contained "misleading and unfair propaganda" and challenged the magazine to present the views of western congressmen and mine operators. The Green bill got nowhere in the 81st congress. A similar bill was introduced in the current congress early this year by Representative Celler (D.-N.Y.).

At year's end the outlook for silver was as favorable as possible without a free market for domestically mined silver. All imported foreign silver was being consumed in industry and the arts. The Bank of Mexico was said to be holding its silver stocks for the minting this year of a new five-peso coin. Silverware manufacturers were buying silver in expectation of increasing sales as purchas-

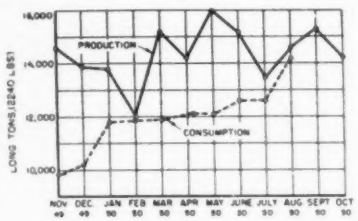
ng power grows with the expanding defense program. Restrictions on use of copper and nickel were increasing the demand for silver as a substitute. The Silver Trade reported American users of silver were buying the white metal at the rate of 150,000,000 ounces a year, compared to a rate of about 100,000,000 ounces in September.

TIN

By ROBERT J. NEKERVIS
Supervisor
Tin Research Institute, Inc.
Columbus, Ohio

In many respects, the position of tin in 1950 was good. The summary of the tin position shows that the basic supply picture, at least, was good. Production was up slightly from 1949 (see production chart). Consumption was up considerably and is shown by consumption chart. This was cheerful news for the miners after the disappointing decline in consumption in 1949.

Examining the production-consumption relationship a step further, the comparisons of monthly totals shows that monthly consumption rates were approaching



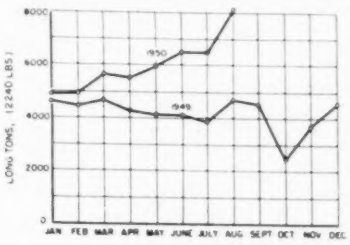
WORLD TIN PRODUCTION VERSUS WORLD TIN CONSUMPTION

production rates. At the end of August 1950, the last month for which we have figures, monthly consumption had almost caught up with production. This increase in consumption rate was largely due to United States consumption increases. The consumption chart shows the marked rate of increase in United States consumption over the last two years. This rate of increase was such that the National Production Authority, to safeguard the stockpiling program, restricted the use of tin for civilian purposes on December 19, 1950. Beginning February 1, 1951, civilian tin consumption was cut to 80 percent of the January-June 1950 rate of use.

Market and Prices

The free tin market was very orderly for the first six months of 1950. Prices remained within the range, 74.13 cents to 78.75 cents per pound. The last six months were chaotic. The price of tin rose steadily, closing at $1.50 at the end of the year 1950. Beginning on Monday, June 26, developments in Korea and the consequent fears of price advances started a buying scramble abroad, where stocks were considerably lower than they were in the United States. Further chaos was induced by the British Ministry of Supply's withdrawal as sellers of "spot" tin on August 10. However, the major cause of the drastic price increases has been United States Government buying for the strategic stockpile.

The tin market at the end of 1950 was still a free market. There are no cartels operating in tin. Numerous attempts to achieve orderly regulation of the tin market have been attempted by conferences between producing and consuming countries. So far, all attempts have been



CONSUMPTION OF TIN IN THE UNITED STATES (EXCLUDING U.S.A. STOCKPILE ACQUISITIONS)

fruitless. The last attempt, the United Nations' conference on tin at Geneva, ended on November 21 in a stalemate. Both the producing countries and the consuming countries, including the principal one, the United States, desire orderly regulation. The crux of the disagreement is over the handling of a "buffer stock," whose function is to prevent both excessive surpluses and shortages.

TUNGSTEN

By WORTHEN BRADLEY
President
Bradley Mining Co.
San Francisco, California

It is difficult to confine this annual tungsten report to the year 1950, for the most interesting part of the story is happening now (late February, 1951). The prices of the ores and concentrates have soared from their 1950 openings of $28.50 per unit, nominal for domestic, and $17.50-$18.00 for foreign, duty paid, to no quotation and $73.00, respectively—when last noted. There is definitely not enough to go around, and tungsten use is being placed under "emergency" allocation, with the expectation that "full" allocation is just around the corner.

But to return to 1950. For the first three quarters of the year the statistics were not startling. Domestic mine production, imports for consumption, and consumption were 3,057, 11,588, and 3,940 tons (60 percent WO_3 basis) during that period. These figures were respectively 125, 187, and 85 percent of their 1949 counterparts (it should be interpolated here that several mines shut down in 1949, and that it was a low year for production—the lowest since 1936). It is believed that 1950 production will approximate 4,200 tons, 138 percent of the 1949 figure; and that, due directly or indirectly to military preparations, the consumption figures will be shown to have made marked gains during 1950's final quarter.

Tungsten Activities Humming

Tungsten activities are humming in the three largest producing states. At its Pine Creek mine near Bishop, California, the U. S. Vanadium Company has built a new custom mill and is increasing its chemical plant capacity 25 percent. A Government chemical plant is being considered for treatment of the low grade ores in the vicinity of the Getchell Mine, northern Nevada (the possibility of renegotiation of contracts is a deterrent in the chemical plant picture). Another silver state property, the Nevada-Massachusetts Company, resumed operation in early 1950, after a 1949 shutdown. North Carolina's Hamme mine of the Tungsten Mining Corporation continued as the nation's second largest producer. Other properties in these states and in Colorado, Idaho, and probably additional states, are starting up, expanding existing facilities, or planning such activities. This year's production will probably be at least 25 percent higher than 1950's.

Since tungsten is an extremely necessary metal and in very short supply, it is expected that the proper Government agencies will take measures to insure increased domestic production. No distinct pattern of such Government policy has as yet emerged, although one official meeting—and several unofficial ones—have been held between Government officials and domestic producers. What the producers want, of course, is a price sufficiently high to more than cover costs, guaranteed for a period of years. What they are getting, thus far, is talk about expansion loans and purchase contracts. The agency dealing with producers and consumers is the DMA (Defense Minerals Administration). The end use of tungsten, in the form of tungsten powder, ferro tungsten, etc., is controlled by the NPA (National Production Authority).

Defense Uses Growing

And speaking of use, the big push on requirements is due to increased need of tungsten powder for armor-piercing projectiles, atomic energy, electronics, jet engines, and carbide tools, among other things. A minor but interesting use, as reported by **Forbes Magazine**, is the building of 0.008 pounds of tungsten into each 3,824 pound automobile. It would be interesting to speculate upon the amount of tungsten required for tools to make the car.

Imports and Prices

Imports for immediate consumption in the third quarter of 1950, in order of size, were from Brazil, Australia, Siam, Belgian Congo, Peru, Bolivia, Korea, and China. It is interesting but not surprising to note the declining position of Korea and China. They are in seventh and eighth place, respectively, as against second and first in 1949.

The price of tungsten ores and concentrates is still rising abroad, with forward offerings very scarce. For would-be importers these conditions must be very difficult, to say the least.

Speaking in global terms the figures that need correcting are, roughly, these: Russia, with China, has 60 percent of the world's productive capacity; the United States normally consumes 40 percent of the world's output; normal United States production is less than 10 percent of United States war requirements.

To attempt what might seem the passing of a loaves-and-fishes miracle the United States, Great Britain, and France have invited some 20 western nations to join in establishing "International machinery" (committees) toward increased production and intelligent allocation of 11 scarce raw materials, including tungsten.

It is a safe bet that Russia is absorbing an expanded Chinese production. But Russia has also stepped up its buying elsewhere in the world market. This is an ominous parallel to the heavy German stockpiling of the years prior to World War II.

TITANIUM

By JOSEPH H. REID
Manager
Titanium Division, National Lead Co.
New York City, New York

In 1950 titanium pigment production and sales were at new high levels, resulting in a record ilmenite consumption. This record ilmenite consumption spurred domestic production to a new high of about 400,000 gross tons which was augmented by imports of approximately 270,000 gross tons. United States consumption, practically all of which was used for titanium pigments, is estimated at close to the combined domestic production and import figure. 1949 domestic production was 340,000 to 360,000 tons and imports were 280,000 to 290,000 tons.

Statistics on foreign production utilized in foreign countries are not yet available, but substantial tonnages of Indian and Norwegian-produced ilmenite were shipped to English, French, German, Indian and Japanese pigment plants.

United States' Operations

In the United States, the MacIntyre Development of the National Lead Company at Tahawus, New York, remained the largest producer with an output of about 250,000 gross tons, approximately the same as in 1949. This property also produced important quantities of iron ore sinter.

The duPont Company at Starke, Florida, (had understood to have had operations conducted by the Humphreys Gold Corporation) became the second largest domestic producer with an output something under half that of the MacIntyre mine. Both ilmenite and leucoxene (an altered titanium mineral containing up to 85 percent TiO_2) are produced at this beach sand property as well as the by-product zircon.

The Rutile Mining Company at Jacksonville, Florida (also operated by the Humphreys Gold Corporation) continued at approximately its 1949 production rate. In addition to ilmenite, production included rutile, zircon and monazite at this beach sand operation. The American Cyanamid Company at Piney River, Virginia, and the Glidden Company in North Carolina also produced ilmenite.

Initial Canadian Production

In Canada the Quebec Iron and Titanium Company (Kennecott-New Jersey Zinc subsidiary) completed installation of one electric furnace at its Sorel smelter and started initial operation of this unit. Also completed, or nearly so, was the construction of docks at both Sorel and at the Havre St. Pierre shipping location, crushing and loading facilities at Havre St. Pierre, the railroad from Havre St Pierre to the Lake Allard ore bodies, and development of these deposits for mining. The smelting operation will produce an iron or steel product and a titanium slag which initially will be marketed for titanium pigment production.

Delivered costs of Indian ilmenite creased during 1950 due principally higher shipping costs in line with general increase in ocean transportati which occurred during 1950, but substa tial orders for Indian ilmenite to shipped during the 1950-1951 season we placed.

The titanium pigment industry, stated, continued to consume practical all the ilmenite produced. Minor amoun were utilized in production of ferro-tit nium alloys and for titanium metal. Tit nium dioxide pigments are used exte sively in protective coatings, includi the painting of naval and cargo vesse tanks, guns and other military materia as well as the necessary maintenance o housing and industrial plants. It is als used as an ingredient in smoke screen welding rods, paper, roofing, rubber goods, plastics, floor coverings, etc.

Titanium Metal

Titanium metal continued to receive considerable publicity. Production remained on a pilot plant basis and although records are not available, estimates ranging from 100,000 to 300,000 pounds of metal produced in 1950 have been published. The international situation has accelerated the already large-scale research and development programs relating to production of sponge, melting of sponge, forming and fabrication of the metal, and application of the metal. Considerable information was published on titanium and titanium alloy properties and possible uses.

In line with the expanding requirements of the titanium pigment industry, and the possible requirements of a titanium metal industry, exploration for titanium minerals was active. Some new production is expected during 1951 from dredging operations in Idaho where titanium minerals are a component of the heavy minerals recovered.

VANADIUM

By BLAIR BURWELL
General Manager
Climax Uranium Company
Grand Junction, Colorado

The figures on production and consumption of vanadium ore in the United States have been suspended since 1947 due to the fact that the principal American vanadium supply is obtained from uranium-bearing carnotite ores. These ores in 1943 and 1944 became the largest source of the world supply of vanadium. Increased exploration and mining of the Colorado Plateau Region since that time, with the discovery of many new deposits and mineralized districts, indicates that the United States has continued its world lead in the production of this metal.

For many years, the use of vanadium has been in tool steels and high-strength engineering steels in the form of ferro-vanadium in combination with tungsten and molybdenum. Its uses have tended to be limited to special alloys where substitutions cannot be made. In the last war, the critical shortage of vanadium for tools and dies and special alloys with chromium led to a planned reduction in

its use and a substitution of other alloys of less critical type. In addition, its cost was relatively high compared to more plentiful alloying elements such as molybdenum. This restriction on its use in many cases was not due to lack of merit of the alloy, but to the shortage of supply in time of need.

Alloy Research Underway

As it now appears that vanadium is in more than plentiful supply due to its by-product position, it appears probable that the beneficial use of this alloy metal may be restored; and research in that direction is now under way.

Prices of vanadium concentrates at $1.00 to $1.25 per pound of V_2O_5 for 86 percent material of low phosphorous content and ferrovanadium at $2.90 to $3.10 per pound of V_2O_5 are relatively unchanged from former years.

ZINC

By ERNEST V. GENT
Executive Vice President
American Zinc Institute, Inc.
New York, New York

In 1950, slab zinc production in the United States reached the highest point since 1943 in spite of some output lost through strikes and shutdowns. Of even more significance was the volume of United States smelter deliveries, 25 percent higher than in 1949 and substantially above all previous records. Shipments for domestic consumption led with an increase of over 30 percent; exports were off 68 percent, but shipments for Government account were up 40 percent.

During 1950 the price of slab zinc, which earlier in the year ranged between 9.75 and 10.0 cents per pound East St. Louis for Prime Western grade, on March 27th commenced an upward movement until September 7th when it reached 17.50 cents, which price still was maintained at December 31st.

Production Trends Upward

Production at domestic mines in 1950 in comparison with the previous year showed an upward trend.

Had it not been for strikes and other shutdowns, the increase would have been larger. Early in the year, the Sterling and Franklin properties in New Jersey continued inactive because of the absence of storage facilities at the mines and the prolonged strike at the Palmerton smelter which ended on January 26th. A labor strike affecting the Midvale, Lark, and Bingham, Utah, properties of the United States Smelting, Refining & Mining Company, coupled with a fire at the Lark mine, resulted in the suspension of production during July and August. In mid-October a labor strike shut down the Hanover, New Mexico, properties and curtailed output from mines shipping custom ore to the Hanover mill. Production was also interrupted in November because of strikes at the Ballard mine in Baxter Springs, Kansas, and at the Eagle-Picher Mining and Smelting Company's operations in Arizona.

Labor costs skyrocketed with the rise in the price of zinc, since wages, generally, are paid on sliding scale contracts or agreements in relation to the price of zinc concentrates. Most Tri-State miners now are earning $12.00 to $15.00 a day, the highest wages ever paid in the history of the field. Increased supply costs, proportionately, have outstripped the increased zinc price. At the same time, the average grade of ore is at the all-time low.

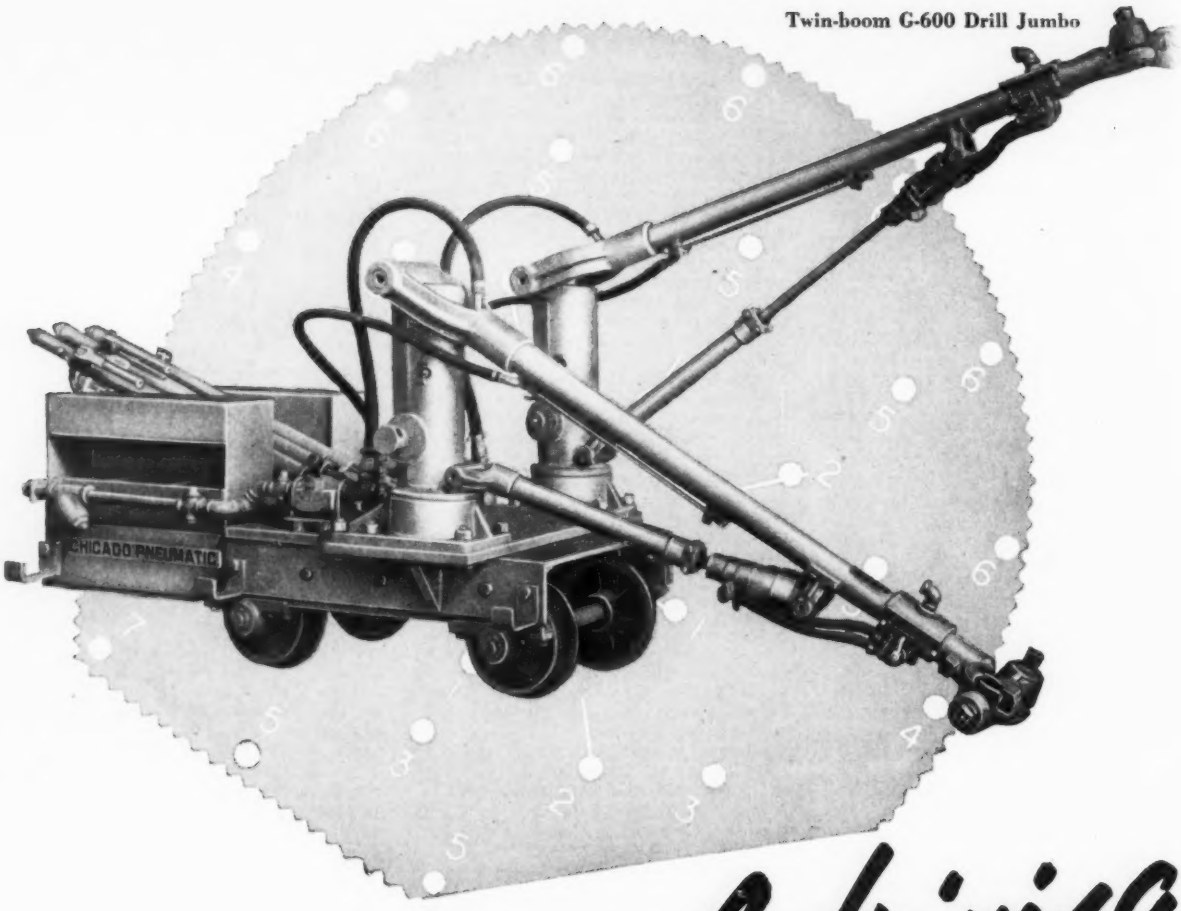
On the threshold of 1951, production is up slightly; and from the standpoint of technical skill, mechanization, known low-grade ore reserves, and adequate labor supply, the Tri-State District is in a favorable position to launch once again into all-out wartime production. More mines are now operating than a year ago. Others were standing by, awaiting the development of a program to increase production as authorized under the Defense Production Act of 1950.

Mine Production Outlook

Estimates for 1951 indicate an increase from domestic mines from 617,000 tons to 660,000 to 690,000 tons.

It should be emphasized that many problems must be solved before mine production can be increased. This applies whether known reserves or new reserves are involved. The development of existing reserves in the United States is handicapped by the declining tenor of the ores and the high cost of production which makes the necessary investment a hazardous undertaking and unattractive to risk capital. Again the scarcity of supplies and labor adds to the problem and, in any event, the time required for the successful development and production of reserves is a matter of years rather than months. Exploration for new reserves involves even more time and difficulty.

Twin-boom G-600 Drill Jumbo



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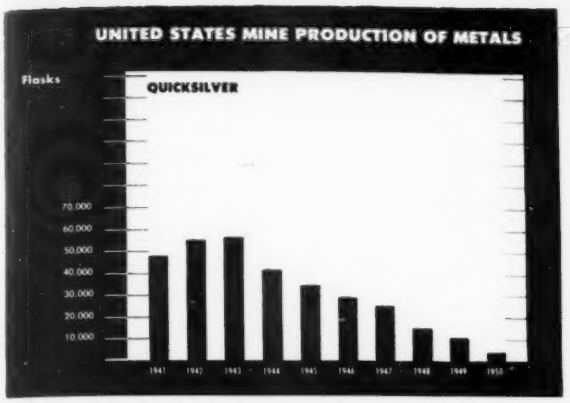
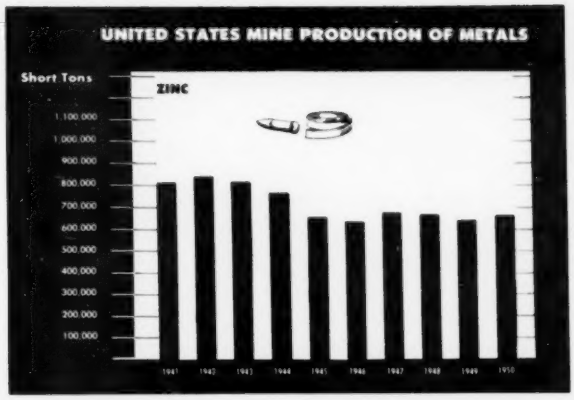
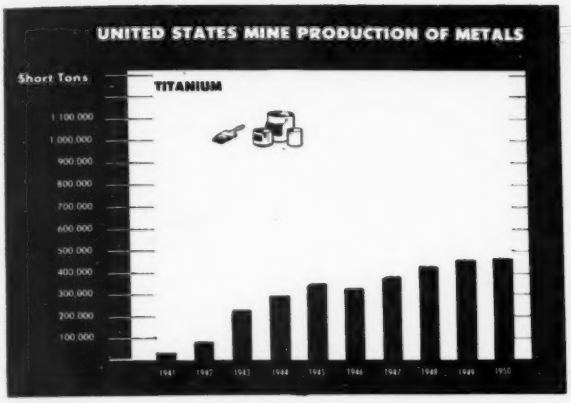
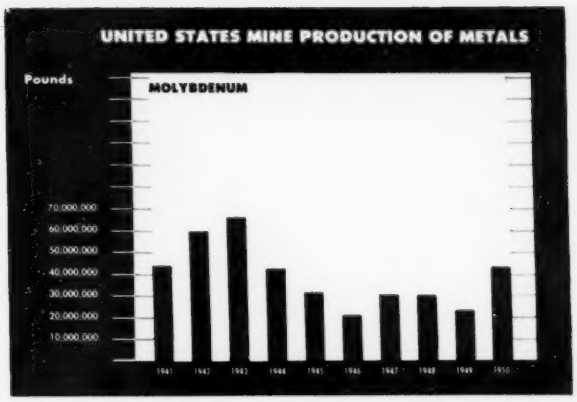
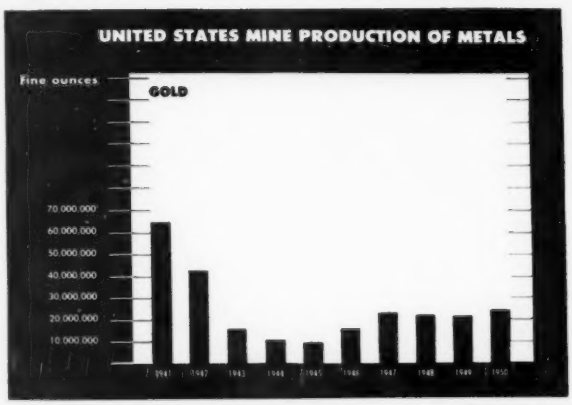
PRODUCTION TRENDS DURING LAST 10 YEARS

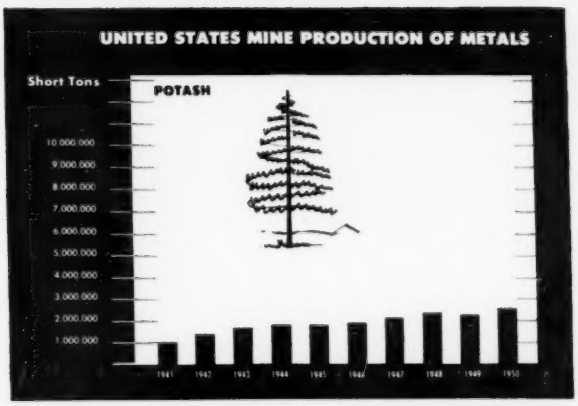


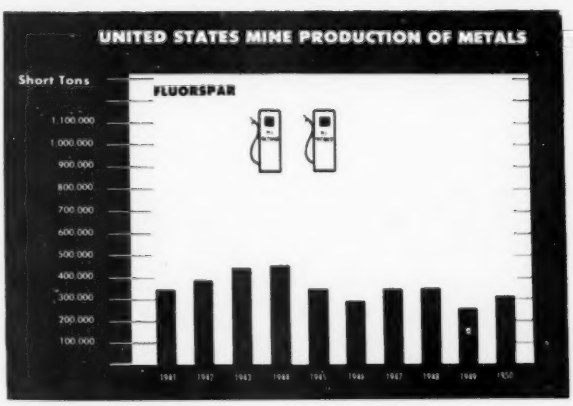


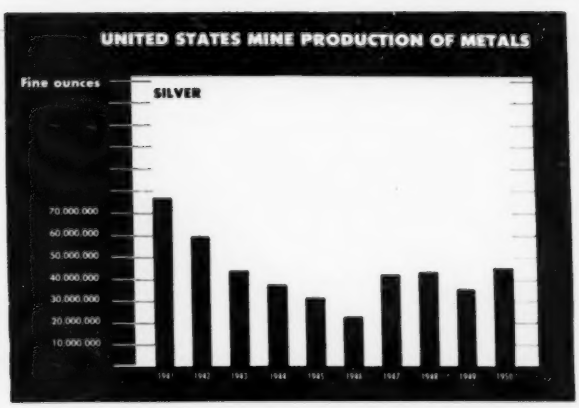


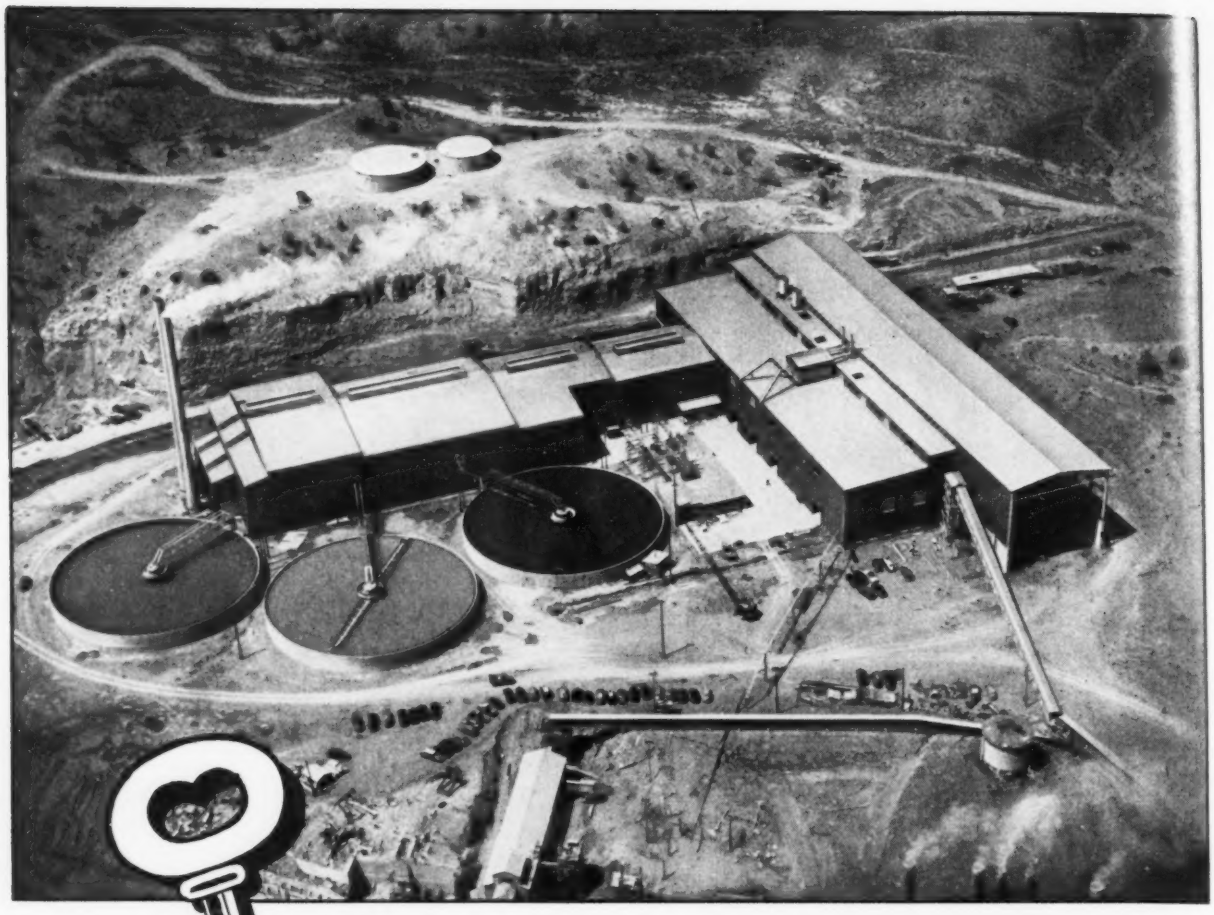












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UNITED STATES MINING REPORT

ALASKA

Gold output at post-war peak; platinum and tin placering

Gold production reached a post-war peak in Alaska during 1950 and was the largest since 1942. As usual, placer gold was the most important and the United States Smelting, Refining and Mining Company was by far the greatest producer. It operated five dredges in the Fairbanks district and three in the Nome district in 1950. The Fairbanks dredges operated on Cripple, Ester, Engineer, Eldorado and Fairbanks Creeks. The Company's No. 5 dredge at Nome operated to December, reportedly the latest operational date on record. Gold Placers, Inc. and Alluvial Golds, Inc. each operated a 4½-foot connected-bucket-line dredge, Gold Placers on Coal Creek and Alluvial Golds on Woodchopper Creek. The Brinker-Johnson Company operated on Caribou Creek 80 miles east of Fairbanks. The Casa de Pago Company operated two dredges in the Immuchuk River near Nome. In the Kobuk and Squirrel River districts, on Cleary Creek, the Helcolicon Mines completed and placed in operation a three-cubic-foot dredge. Lammers Exploration Company operated its dredge on Squirrel River. Strandberg Brothers operated their Candle Creek dredge for the first time since 1941. In the Ruby-Poorman area the Miscovich brothers stripped overburden on Flat Creek. Clarence Zaser operated on Spruce Creek and John May and Bill Carlo placered on Ophir Creek and found many coarse nuggets. Hans Tillson and Bob Deacon placered and stripped overburden on the Novi property. The Livengood Placers, Inc. thawed placer ground and stripped overburden in preparation for dredging during the 1951 season. The Independence mine of the Alaska Pacific Consolidated Gold Mining Company was the largest lode gold producer during the year. The Hirst-Chichagof Mining Company resumed production after being shut down since October 1942.

Placer platinum-metals production of the Goodnews Bay Mining Company was larger than in 1949. The company operated its connected-bucket-line dredge in the Kuskokwin district. Tin placering was active on the Seward Peninsula region with the Northern Tin Company operating its Buck Creek mine and the United States Tin Corporation its Lost River placer in the Port Clarence district. Total Alaskan production of placer tin concentrate was about 134 short tons in 1950.

ARIZONA

The state held first place as a metal producer

Arizona in 1950 was the largest producer of copper in the United States, ranked fourth in zinc, and again held first place in the total value of gold, silver, copper, lead and zinc produced.

Copper production in Arizona in 1950 increased 12 percent, compared to 1949, and was the greatest since 1943. As economic conditions were favorable for the large low-grade producers, more copper ore was mined than in any year in the state's history. However, since the recovery of copper was below that of 1929 and 1943, it is evident that ores of lower grade are being mined. Since 1860, Arizona has produced 35.47 percent of the total copper output of the United States.

The Morenci mine of Phelps Dodge Corporation remained by far the largest producer, and its output in 1950 was about 10 percent greater than in 1949. It was followed by the New Cornelia, Inspiration, Ray, Miami, Castle Dome, Magma, Copper Queen, United Verde, and Bagdad properties.

The year 1950 brought into production the sixth major openpit mine in Arizona, the Ray mines of Kennecott Copper Corporation, in the Mineral Creek district. Mining operations at the six openpits—Bagdad, Castle Dome, Inspiration, Morenci, New Cornelia, and Ray—were conducted on a near-capacity basis, producing approximately 37,000,000 tons of copper ore, compared with 29,082,243 tons produced by the five openpit mines in 1949.

In July, Phelps Dodge Corporation placed in operation its new copper smelter at Ajo to treat the concentrates from its New Cornelia mine. These concentrates previously were shipped to Douglas for smelting. The other copper smelters in Arizona, International Smelting and Refining Company at Miami, Magma Copper Company at Superior, Phelps Dodge Corporation at Douglas and Morenci, and American Smelting and Refining Company at Hayden, operated continuously throughout the year at a higher rate than in 1949.

Nearly 66 percent of the state's gold production and 62 percent of the silver production in 1950 came from copper ore mined at Ajo, Bisbee, Jerome, Superior, and Miami. Six properties produced 90 percent of the state's gold—New Cornelia, Iron King, Magma, Copper Queen, United Verde, and Morenci. These same six properties produced 74 percent of Arizona's 1950 silver output.

The output of silver from the Warren district, the principal silver-producing area in Arizona, decreased from 1,166,210 ounces in 1949 to about 1,110,000 ounces in 1950. The loss resulted from curtailment of zinc-lead operations at the Copper Queen mine at Bisbee. The total output of silver in 1950 was 5,314,615 ounces, the largest since 1943, and a 7 percent gain over 1949.

Arizona's production of lead and zinc declined 22 percent and 14 percent, respectively. The loss was due principally to the gradual exhaustion of zinc-lead ores at the Copper Queen Branch, Phelps Dodge Corporation. Other large lead producers were the Mammoth-St. Anthony property at Tiger, the Iron King mine at Humboldt, the San Xavier of Eagle-Picher Mining and Smelting Company south of Tucson, and the Flux-January-Norton group of American Smelting and Refining Company near Patagonia. These five properties accounted for 88 percent of the state's lead output.

Substantial increases in the production of zinc from the United Verde, Iron King, and Flux-January-Norton properties, and new production from the Magma mine partially offset the 41 percent decrease in zinc output at the Copper Queen. The seven principal producers, which accounted for 79 percent of the state's 1950 zinc production, were: Copper Queen, United Verde, Iron King, Flux-January-Norton, San Xavier, Mammoth-St. Anthony, and Magma.

Several new developments, of importance to Arizona's mining future, occurred during 1950.

Consistent progress was made in the exploration work at the San Manuel Copper Company's holdings in the Old Hat district. At the year's end a depth of approximately 1,500 feet had been attained by the No. 1, or production, shaft, and over 1,750 feet by the No. 2 shaft, an exploratory shaft being sunk within the orebody. Both shafts will be sunk to approximately the 2,000-foot level. Excessive water has been a serious and delaying factor, with about 900 gpm being pumped from the No. 1 shaft and 850 gpm from the No. 2 shaft.

The San Manuel orebody, the major copper discovery of recent years, was proved by diamond drilling to contain approximately 500,000,000 tons of ore with an average copper content of 0.8 percent. Plans call for mining from 25,000 to 30,000 tons daily by underground methods, the depth of the orebody below the surface making openpit operations impossible.

Magma Copper Company at Superior reported the discovery of an entirely new high-grade orebody. The discovery was made on the 3,000-foot level about 2,000 feet east of the eastern limits of the orebody previously known. The ore occurs at the replacement horizon between the quartzite and limestone. Drift-

Production of Gold, Silver, Copper and Lead in Alaska from 1941 Through 1950

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons
1941	695,467	191,522	72	662
1942	487,621	119,704	22	415
1943	99,583	42,788	27	200
1944	49,296	13,362	2	44
1945	68,117	9,983	5	11
1946	226,781	41,793	2	115
1947	279,988	66,150	12	264
1948	248,395	67,341	16	329
1949	229,416	36,056	4	51
1950[1]	282,866	48,478	7	150

[1]Estimated

ing on the 3,400 level, to open the area at that depth, was in progress at the close of the year. In July, Magma resumed the mining of zinc ore. About 350 tons of zinc-copper ore were milled daily, in addition to 1,100 tons of copper ore.

A new producer for the Globe-Miami district will result from plans of the Copper Cities Mining Company, a wholly owned subsidiary of the Miami Copper Company. Late in 1950 an RFC loan was negotiated which will make possible a $13,000,000 development to bring into production a group of holdings three miles northeast of Miami in the Sleeping Beauty district.

In December, Phelps Dodge Corporation announced plans for a $25,000,000 project which brought renewed life to the Bisbee district and will give the state another large openpit copper producer.

Production of Gold, Silver, Copper, Lead and Zinc in Arizona from 1941 Through 1950

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons
1941	315,392	7,498,260	326,317	15,638	[illegible]
1942	253,651	7,064,467	373,387	14,772	[illegible]
1943	171,810	5,713,889	403,181	13,727	[illegible]
1944	112,162	4,394,039	358,303	16,707	[illegible]
1945	77,223	3,558,216	287,203	22,867	[illegible]
1946	79,024	3,268,765	289,223	23,930	[illegible]
1947	95,860	4,569,084	366,218	28,566	[illegible]
1948	109,487	4,837,740	375,121	29,899	[illegible]
1949	108,993	4,970,736	359,021	33,568	[illegible]
1950[1]	114,000	5,314,615	401,089	26,080	[illegible]

[1]Estimated

It will be financed entirely by corporation funds. Phelps Dodge proposes to strip up to 350 feet of waste to make possible production from the low-grade Bisbee East orebody, said to be an extension of the old Sacramento Hill deposit. A portion of the town is being moved to a new residential district, the main highway must be re-routed, and other basic changes will be required to make room for the openpit.

Near Safford, in Graham County, Consolidated Coppermines Corporation carried on its drilling program throughout the year. While no results have been announced, the fact that exploration has continued would indicate that the findings are considered favorable for the opening of a new producing area.

Late in the summer, the Coronado Copper and Zinc Company resumed production of copper-zinc ore at its Republic mine near Dragoon. This property had been closed down in mid-1949, following the drop in metal prices.

Shattuck Denn Mining Company, operator of the Iron King lead-zinc mine at Humboldt, announced plans for a new production shaft to be started in the near future.

The search for uranium continued in all sections of the state and some additional discoveries were made. However, there was little actual production except from the Navajo Indian Reservation, in the northeast corner of the state, where the Vanadium Corporation of America conducted regular mining operations at a half dozen mines, and F. A. Sitton shipped from the newly developed Lukachukai Mountain mines.

Discoveries and production in that same area, made by F. A. Sitton of Dove Creek, Colorado, may result in the construction of a 200-ton mill to process the uranium-vanadium ore if suitable arrangements can be made with the Navajo Tribal Council.

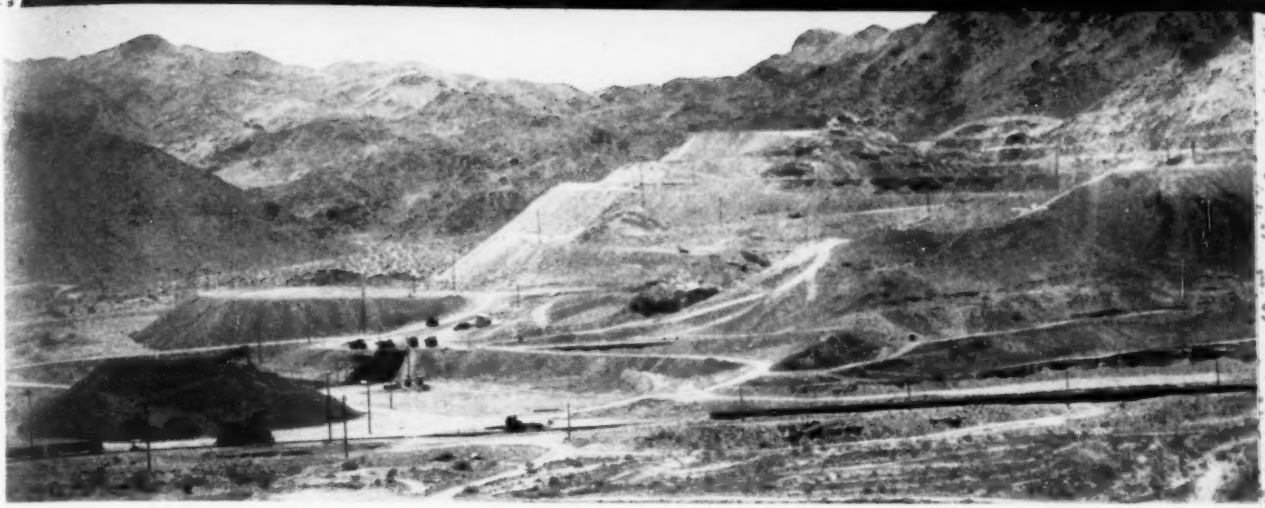
In the field of nonmetallics, Arizona made consistent progress in 1950. At least 19 nonmetallic products were produced commercially, some of which are of strategic importance, such as asbestos, beryl, fluorspar, and mica.

CALIFORNIA

Lead-zinc sets record; gold slips; strategics prepare

In 1950, California continued as the No. 1 producer of borates and other important salines, of tungsten and mercury, but in gold production she was pushed from No. 2 position by Utah, whose rising production from the Bingham copper pit increased production of secondary gold.

Gold production started the year strongly, rose to a peak of 40,000 ounces monthly in March, then fell slowly to 30,000 ounces in December—mute forecast of a slow 1951 in gold. But the year's production of 410,000 ounces still accounted for two-thirds of the value of California's base and precious metal production. Placer gold accounted for 60 percent of the total—Yuba Consolidated Gold Fields with bucketline dredges in Yuba, Butte, and Siskiyou counties; Natomas and Capitol Dredging Company with



Kaiser Steel Corporation's Eagle Mountain iron ore mine, Desert Center, set production records for California iron ore during 1950.

bucketlines in Sacramento county were the major placer producers.

Lode gold accounted for 40 percent of the total—operating near Grass Valley, Empire Star Mines Company, Ltd., and Idaho-Maryland Mines Corp. were the state's leading lode-gold mines. At Sutter Creek in the Mother Lode district, Central Eureka Mining Company, efficiently working newly found ore on the 3900 level, broke into the black side of the ledger as the No. 3 lode-gold producer. Near Downieville, Best Mines Company acquired the Brush Creek mine and a recently built 100-ton mill from Alfred L. Merritt, leased adjoining claims, worked the consolidated properties as a unit, and finished the year as a significant gold producer.

Lead and zinc output, accounting for 28 percent of California's base and precious production, rose 41 percent from 1949 to set a new state production record. Anaconda Copper Mining Company's Darwin and Shoshone operations were the major producers. From the Minnietta mine near Panamint Springs, Tom Vignich and Ross Finley shipped lead-silver concentrates to the Selby smelter. At Campo Seco, Penn Chemical Company re-opened the Penn mine, put the recently remodeled 50-ton flotation mill into operation, and produced significant amounts of zinc, copper and gold.

Though California was top state in mercury production, that mercury came from only two operating mines; Sonoma Quicksilver Mines, Inc., produced approximately 75 flasks per week from the Mt. Jackson mine near Guerneville; Louis Sciochetti produced 25 flasks per week from the Juniper mine near Hollister. At year's end, with higher prices and increased demand, resumption of several important mercury mines was believed imminent.

Late in the year, spurred by the armament-economy demand for tungsten, operators showed a renewed interest in production. U. S. Vanadium Company, the largest U. S. tungsten producer, made plans to accept custom ores and concentrates at its Pine Creek mill near Bishop. Discovered early in 1950, the Starbright mine, 25 miles north of Barstow, was operated by Mineral Materials Company as an openpit; at year's end the mine was producing 30 tons daily of scheelite ore which was shipped to Bishop for concentration. Fresno Mining Company planned to re-open the Strawberry mine for full-scale production. A promising late-1950 discovery of tungsten mineralization in Placer county is scheduled for extended exploration during 1951.

Molybdenum Corporation of America acquired the 1949 discovery of rare-earth claims 33 miles northeast of Baker, added to the original claim area, and launched a program to explore and develop the important cerium-lanthanum deposit.

With the Eagle Mountain iron ore mine producing at 3,500 tons daily, and with production increasing, Kaiser Steel Corporation made plans to increase Fontana steel capacity to 1,380,000 tons of ingots yearly.

CENTRAL STATES

Lead and zinc mining upturn largely due to higher prices

Mining in the Central United States in 1950 showed a complete reversal of the trend followed by the area in 1949. Production was up, marginal properties were reopening and most of the major producers had effected plans for expanding their output.

Missouri, for the forty-third straight year, was the largest producer of lead in the nation. It ran well ahead of Idaho and paced the region to a 6,300 ton increase in output over the previous year. In spite of the increase, low lead prices early in the year caused a 21 percent drop in the average price and a decline in the dollar value of production.

Mine Production of Lead and Zinc in Kansas from 1941 Through 1950

Year	Tons Lead	Tons Zinc
1941	14,538	71,403
1942	9,419	55,874
1943	9,213	56,944
1944	9,394	63,703
1945	7,370	48,394
1946	6,445	47,703
1947	7,285	41,497
1948	8,386	35,577
1949	9,772	29,433
1950[1]	8,276	27,022

[1]Estimated

The bulk of the lead, as usual, came from the southeastern Missouri lead belt where the operation by St. Joseph Lead Company of its group of mines and four mills, its Mine La Motte and Herculaneum lead smelter was the major producer.

Copper and silver in the Central States comes principally from the ores of the Missouri lead belt. Output usually follows the trend of lead production, but this year only the silver showed the expected sharp upward swing. Copper output dropped slightly.

Production of Lead, Zinc and Gypsum in Oklahoma from 1941 Through 1950

Year	Tons Lead	Tons Zinc	Tons Gypsum
1941	25,021	166,602	258,258
1942	22,806	146,510	243,545
1943	19,733	114,085	371,893
1944	13,944	91,449	295,604
1945	12,664	69,300	32,343
1946	13,697	69,552	138,314
1947	14,289	51,062	239,468
1948	16,918	43,821	292,605
1949	19,858	44,033	355,590
1950	20,374	46,974	339,746

[1]Estimated

Zinc production from the four central states was up slightly as a result of increased activity in the Tri-State region (southwestern Missouri-Oklahoma-Kansas) during the last half of the year. However, the 3,000 ton boost in output did not reflect the full story of price

Production of Gold, Silver, Copper, Lead and Zinc in California from 1941 Through 1950

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons
1941	1,408,793	2,154,188	3,943	3,464	440
1942	847,997	1,450,440	1,058	5,351	613
1943	148,328	609,075	8,762	5,820	1,856
1944	117,373	778,936	12,721	5,682	8,435
1945	147,938	986,798	6,473	7,224	9,923
1946	356,824	1,342,651	4,240	9,923	6,877
1947	431,415	1,597,442	2,407	10,080	5,415
1948	421,473	724,771	481	9,110	5,325
1949	417,231	783,880	649	10,318	7,209
1950[1]	410,660	1,102,630	620	16,110	7,930

[1]Estimated

trends which saw concentrate soar from a low of $55.00 per ton early in the year to a high of $115.00 a ton during the last quarter. Lead production was down slightly for the year.

Production of Lead and Zinc in Missouri from 1941 Through 1950

Year	Tons Lead	Tons Zinc
1941	165,909	21[illegible]
1942	199,548	29[illegible]
1943	184,910	30[illegible]
1944	174,683	30[illegible]
1945	176,575	22[illegible]
1946	139,112	22[illegible]
1947	132,246	17[illegible]
1948	102,288	[illegible]
1949	127,522	[illegible]
1950[1]	134,104	[illegible]

[1]Estimated

Major production came from the same group of operations as in the past with Eagle-Picher Mining and Smelting Company being, by far, the largest. The company operated about twenty mines and its Central mill at Cardin, Oklahoma. Eagle-Picher's Bird Dog mill operated throughout the year on slimes, with indication that a solution to one of the district's most stubborn metallurgical problems had been reached. The most interesting new mine development during the year was the openpit operation of the Snapp property in the Joplin field by George Potter and Dewey Sims.

COLORADO

Uranium miners active; number of base metal producers down

The two Climax companies were the feature of Colorado's mining during 1950. In May, formation of the Climax Uranium Company, a subsidiary of the Climax Molybdenum Company, was announced. The new company acquired the uranium-vanadium mines and claims of the Minerals Engineering Company and immediately started an aggressive mine development program in the Calamity Mesa district, Mesa County, and began erection of a 150-ton-per-day uranium-vanadium processing plant at Grand Junction. Late in 1950 the Climax Molybdenum Company announced the signing of a five-year contract with the United States government calling for maximum molybdenum production from the Climax mine. By year's end the mine was producing 12,000 tons of ore per day. Climax was also a major domestic tungsten producer and the only domestic tin producer during 1950. Tungsten and tin are both by-products of the molybdenum recovery.

In the uranium-vanadium districts of Mesa, Montrose, San Miguel, Dolores and Garfield counties several hundred miners, some large but mostly small, shipped ore to the United States Vanadium Company's Uravan and Rifle plants, to the Vanadium Corporation of America's Naturita and Durango plants and to the Climax Uranium Company's mill stockpile. Some Colorado ore was also trucked to the Monticello, Utah, plant of the U. S. Atomic Energy Commission. The U. S. Geological Survey carried on its extensive geologic mapping and research studies of the Colorado Plateau. Both the Geological Survey and the Atomic Energy Commission let contracts for several hundreds of thousands of feet of diamond drilling.

The entire San Juan Mountains were

e scene of increasing mining activity the Telluride Mines, Inc., at Telluride, n Miguel County, completed the Mill-Level Tunnel to the Montana vein, ifted north on the vein and connected hrough to the Pennsylvania-Tunnel level 1,100 feet above by a combination Mill-Level Tunnel raising and Pennsylvania Tunnel winzing. Telluride Mines was the state's largest gold producer and was third in lead and fifth in zinc production.

The Idarado Mining Company milled about 230,000 tons of ore from the Black Bear and Ajax veins in its increased capacity, 800 tons per day, lead-zinc-copper differential flotation mill at the portal of the Treasury Tunnel in Ouray County. Idarado was the state's largest copper producer and was second largest in gold, silver, lead and zinc production. Homestake Mining Company purchased about a one-tenth interest in Idarado during the year. Idarado continued deep level development of its holding through the Meldrum Tunnel which is portaled in San Miguel County.

In San Juan County the following companies operated mines and mills: Shenandoah-Dives Mining Company (700-ton mill), Pride of the West (100-ton), Highland Mary Mines, Inc. (100-ton), Bonita Mining & Development Company (40-ton), Osceolla Mining & Milling Corporation (75-ton), and the Foursome Mining Company (25-ton).

The Rico Argentine Mining Company, Dolores County, did development work throughout the year at the Mountain Springs, Swan, Wellington and Argentine mines and operated its remodeled 100-ton differential flotation mill after August.

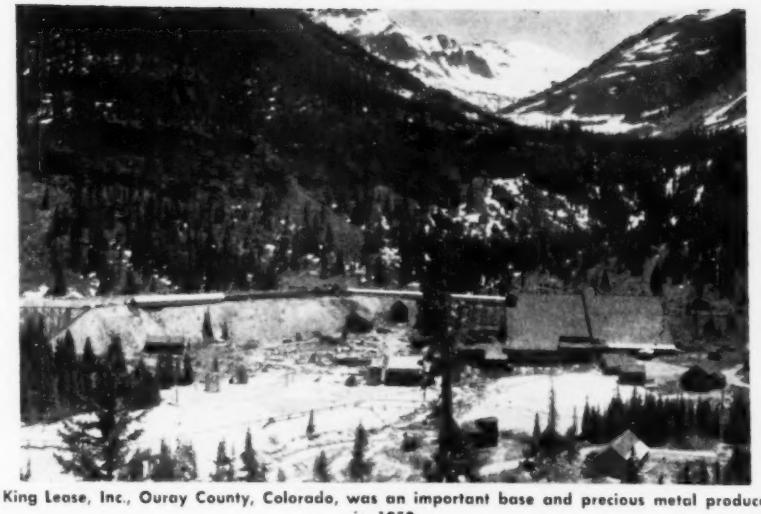
In the Leadville, Lake County area, the 400-ton-per-day Leadville Milling Unit of the American Smelting and Refining Company was closed on April 19th, due to inadequate ore supplies. However, the company modernized its Arkansas Valley lead smelter and continued deep exploration of the Ibex-Garbut-Sunday group of claims during the year. The Utah Construction Company started advancing the Leadville Drainage Tunnel on September 20th under contract from the U. S. Bureau of Mines and by year's end had extended it 900 feet.

In Gunnison County the Park City Consolidated Mines Company continued one of the state's most important development programs at the Keystone mine and disclosed two copper-zinc-lead-silver ore shoots.

The Colorado Fuel & Iron Corporation closed its Wagon Wheel Gap, Mineral County, fluorspar mine after 25 years of operation. In Boulder County, Harry M. Williamson and Son operated the Emmett mine, and the General Chemical Division of the Allied Chemical and Dye Corporation's Burlington mine produced 100 tons of fluorspar per day throughout the year.

In Boulder County higher prices for tungsten in the last quarter of the year brought increased activity in the Nederland district. Hetzer Mines, Inc., operated its mill at Nederland to treat custom ore from many small mines. The Canadian Uranium and Radium Corporation leased the Cold Spring mine from Hetzer mines and reopened the No. 2 shaft.

The number of producing base and precious metal mines continued to decline in 1950 to about 215 compared to the 255 producing mines in 1949.



King Lease, Inc., Ouray County, Colorado, was an important base and precious metal producer in 1950.

EASTERN STATES

Important mine developments and plant expansion in 1950

Mining in the eastern states continued throughout 1950 at a high level, and projects initiated during the year gave promise of even greater output in the future. Spurred by the reopening of some mines and hampered by a minimum amount of labor trouble, production of all metals and major nonmetallics, except lead, showed an increase.

Some of the increases may be attributed directly to improved metal prices. On the other hand, some of the developments in zinc promise to be of continuing importance. American Zinc Company of Tennessee reopened its Athletic, Grasselli, Jarnigan and Mascot No. 2 mines near Mascot, Tennessee, an action largely made possible by higher prices. However, production from the northern Illinois-southern Wisconsin field was up a full 45 percent as a result of the first full year of operation of Calumet and Hecla Consolidated Copper Company's Wisconsin Branch near Shullsburg, and Eagle-Picher Mining & Smelting Company's mine near Galena, plus the opening of a new property by Vinegar Hill Zinc Company. All of the above can be considered economic operations under normal price conditions and properties of substantial life expectancy.

Alcoa Mining Company placed its Hutson mine in Kentucky in production, and New Jersey Zinc Company continued shaft sinking and development of the Friedensville property in Pennsylvania.

The big jump in copper output resulted largely from increased activity in Michigan where prices made expanded operations possible. Calumet and Hecla Consolidated Copper Company, after virtually suspending all operations at one point during 1949, returned to large scale operation at several of its properties. Pennsylvania, Tennessee and Vermont, the only other eastern states producing copper, showed an eight percent increase in output.

Copper Range Company continued to explore and develop its White Pine orebody in Michigan. Late in the year, plans were announced for placing the low-grade deposits into large scale production.

The iron business, too was booming. Production from the northeastern states was up 17 percent. A large push by the underground mines of New Jersey raised that state's output by 27 percent, which accounted for most of the increase.

Further increases can reasonably be expected in 1951. Jones & Laughlin Steel Corporation announced that capacity of the concentrator at its Benson Mine near

Production of Tungsten and Feldspar in North Carolina from 1941 Through 1950

Year	Tungsten*	Feldspar**
1941	..	100,016
1942	..	93,644
1943	47	112,144
1944	187	122,857
1945	139	148,493
1946	307	230,367
1947	578	220,997
1948	942	201,774
1949	942	160,916
1950[1]	1,200	190,000

*Short ton units 60% WO_3
**Crude feldspar sold or used (long tons)
[1]Estimated

Production of Gold, Silver, Copper, Lead and Zinc in Colorado from 1941 Through 1950

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons
1941	380,029	7,301,697	6,748	12,574	15,722
1942	268,627	3,096,211	1,302	15,181	32,215
1943	137,558	2,664,142	1,028	18,032	44,094
1944	111,455	2,248,830	1,048	17,698	39,995
1945	100,935	2,226,780	1,485	17,044	35,273
1946	142,613	2,240,151	1,754	17,036	36,147
1947	168,279	2,557,653	2,150	18,696	38,745
1948	154,802	3,011,011	2,298	25,143	45,164
1949	102,618	2,894,886	2,403	26,853	47,703
1950[1]	130,000	3,540,000	3,200	26,700	45,854

[1]Estimated

Production of Gold, Silver, Copper, Lead and Zinc in States East of the Mississippi River from 1941 Through 1950

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons
1941	21,892	106,051	60,006	9,426	207,173
1942	14,699	105,307	59,881	7,929	219,031
1943	2,878	128,129	61,009	8,046	210,402
1944	2,595	124,006	57,470	9,822	199,479
1945	1,857	81,983	42,856	10,069	180,322
1946	1,432	76,964	34,513	11,127	161,876
1947	1,997	137,780	36,875	9,026	181,792
1948	2,479	101,171	42,025	10,706	177,787
1949	1,967	101,612	32,955	9,755	156,298
1950[1]	2,061	111,259	39,824	8,470	170,726

[1]Estimated

Star Lake, New York, would be increased by 30 percent—to 1,300,000 tons per year. About 200 Humphreys Spirals will be used to treat nonmagnetic fines which in the past have gone into the tailings pond.

Bethlehem Steel Company, too, has added to its treatment facilities. Reasonably continuous operation of its pelletizing plant at Lebanon, Pennsylvania, has been attained; and a satisfactory blast furnace feed is being produced from hematite fines that previously gave trouble when charged in quantities.

Universal Exploration Company closed its Hyatt mine in New York, but St. Joseph Lead Company stepped up production from its Balmat mine enough that the Hyatt's closing did not affect lead output from the state. However, overall declines in lead in the eastern states resulted from somewhat lower coming from fluorspar operations in Kentucky and Illinois, and from the lower lead content of lead-zinc ores from northern Illinois and southern Wisconsin.

In seeming conflict with the above figures is the fact that fluorspar output from the region was high—19 percent above 1949. The drop in lead resulted from the closing of one Kentucky property. Fluorspar customarily follows demand and demand neared an all-time high. The Illinois-Kentucky field accounted for most of the nation's output. The state of Florida took an increasingly important place in the production of phosphate, rutile, ilmenite, zirconium, and the like.

IDAHO

Cobalt, antimony and monazite hold spotlight; base metals up

Base metal mining in Idaho during 1950 continued to show a healthy growth, with the lead-zinc-silver operators enjoying the impetus provided by higher metal prices and what may become an unprecedented demand.

The production of silver gained 62 percent, lead 29 percent, and zinc 15 percent to maintain Idaho's first place in production of silver and zinc, and second place for lead. Of the Coeur d'Alene Producers, Bunker Hill & Sullivan Mining and Concentrating Company remained the chief lead producer, increasing its output by 60 percent. Sunshine Mining Company continued to lead in silver production, showing an increase of 79 percent and contributing to the district's share of 94 percent of Idaho silver in 1950. The Star mine near Burke repeated its lead in zinc production, increasing its output by 32 percent.

The Pine Creek area of the Coeur d'Alene district, once a scene of difficulty and despair because of its zinc, continued its progress toward an equal place with lead and silver producers. All producing properties were in some stage of shaft sinking or preparation. Sunset Minerals, Inc. was deepening its 1,000-foot vertical shaft; Little Pittsburgh prepared to sink; Sidney Mining Company installed a double-drum hoist and had a sinking project over half completed to a level 200 feet below its main haulageway; Highland-Surprise Consolidated Mining Company finished sinking to the 1450-foot level; Spokane-Idaho Mining Company cut a pocket and station on its 1600-foot level and a station off the main haulageway for a new double-drum main hoist.

Pine Creek is the largest zinc-producing area in the state, having three of the top producers—Sidney, Highland-Surprise, and Spokane-Idaho. Sunset Minerals is expected to be among the top ten for 1950, and the Little Pittsburgh produced a sizeable tonnage. The future of this area shows great promise—no mine has closed because of bottoming of its ore shoots, and many years of possible life is indicated. There are several other

Production of Gold, Silver, Copper, Lead and Zinc in Idaho from 1941 Through 1950

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons
1941	149,816	16,672,410	3,621	104,914	79,084
1942	95,020	14,644,800	3,430	113,909	87,256
1943	30,808	11,700,180	2,324	90,457	86,707
1944	25,008	9,931,614	1,688	83,530	91,372
1945	17,780	8,142,667	1,548	68,447	83,463
1946	42,975	6,491,104	1,038	59,987	71,817
1947	64,982	10,345,779	1,640	78,944	83,069
1948	58,454	11,448,875	1,624	88,344	86,267
1949	77,829	10,049,257	1,438	79,299	76,555
1950[1]	80,500	16,250,500	1,880	102,500	87,830

[1]Estimated

properties not now in production which should become producers.

Further deep-level exploration is either being undertaken or contemplated by a number of operators, among which is Day Mines, Inc's decision to develop the Fern and Triangle holdings through the old Rainbow tunnel.

Other activities of note in the district include the completion of an extensive mine ventilation project by Silver Summit Mining Company which also trucked high-grade ore to the Polaris Mining Company's mill. Nabob Silver Lead Company acquired the Shetland group of three claims between its property and that of Sunset Minerals, while the latter sunk a winze from the 1200 level. Lucky Friday drifted east on the new 1800-level.

Silver Dollar Mining Company continued exploration on the 1800-foot level Hershey crosscut, and advanced over 75 feet from where the shear zone footwall was first encountered. Stringers of ore were cut in a formation similar to that of the Yankee Girl vein of Sunshine at sea level.

Sunshine explored for uranium, after Atomic Energy Commission representatives found evidences of that metal, by drilling and clearing of old workings, and underground development was undertaken, to "delineate the radioactive zones and determine the commercial possibilities of the occurrence." Continuance of the very high-grade silver ore in the Hook Section of the Rotbart area on the new 3400 level was established and is expected to be fully equal to the upper sections.

Exploration in Sunshine Consolidated, Inc's ground virtually ceased in favor of actual mining of ore, and gross income through the year showed a regular quarterly gain.

Day Mines, Inc. explored the far western portion of its Hercules mine on the 1000-level, and expressed satisfaction in the findings. Freshly broken ore from the Amazon vein, plus old fillings from Interstate stopes furnished a profitable tonnage to the Carlisle mill. The Callahan Zinc-Vulcan deep-level exploration project, being carried on jointly by American Smelting & Refining Company and Day Mines, produced ore which was processed at the Galena Mill. Late in October, crosscuts on the 3000 level intersected several mineable widths of milling grade ore.

Bunker Hill & Sullivan resumed block caving when prices of metals increased and brought toward completion a "streamlining" program of several years duration, which included extensive smelter, milling and mine plant work, and construction of a 2,000,000 gallon water reservoir to ensure a sufficient supply for expanded milling operations. Officials revealed that at year's end the grade and quantity of ore reserves had never been better. In September, a new ore showing on the 1700 level was opened, which was said to be the best of any drift in the mine. Plans were completed for a new, three-compartment shaft to the 2000 level, to be sunk about one mile northwest of the main shaft, and used for the movement of men and supplies.

Coeur d'Alene Mines Corporation stoped on the 2800 level of American Silver Mining Company's extra-lateral ground and found indications that the orebody lengthened as the raise advanced. The work is being done in an area where good ore was disclosed by diamond drilling in the summer.

Federal Mining and Smelting Company's Morning mine instituted a plan to increase the life of the old property by deepening its shaft to the 5050 level, a project expected to be of two years' duration.

Bradley [illegible] ipany's Yellow Pine mine [illegible] Valley County, and Clayt[illegible] mines, in Custer County, we[illegible] among lode producers of the area, [illegible] 12 placer operations, mostly in the Elk City and Yankee Fork districts, showed a gain in gold recovered over the past year. Of note among placer operations, Rare Earths, Inc. and Baumhoff and Marshall, Inc. dredged in Idaho and Valley Counties for monazite sands. Although thorium contained in the monazite is not at present purchased by the AEC, stockpiling of the material is required.

Of paramount defense interest, Calera Mining Company's Blackbird mine rapidly moved toward completion of work preliminary to production of strategically important cobalt ore. After more than 22,000 feet of diamond drilling had indicated sufficient ore reserves, mining preparations followed, with construction continuing on a 600-ton mill. Yearly production of cobalt was originally scheduled for two million pounds but later revised upward by one half. Federal aid for improvements over a 50-mile access road will, when consummated, greatly facilitate concentrate movements, and a recent electricity installation is a feature of modernization.

Sharing the benefit of electrification, Goldstone Mining Company near Salmon hooked into the power line with the stringing of seven miles of tributary wire. Mill machinery was trucked to the site at the mine, and construction will proceed in early 1951; the planned 2,000-foot tunnel, now 1,200 feet from the orebody, is being driven forward.

LAKE SUPERIOR REGION

Despite a short shipping season, iron output was up

In no other area of the United States is the upsurge of activity in the metal mining industry so pointedly dramatized as in the iron producing regions of the Lake Superior district. This tight little geographic area is concerned with only one thing—iron. That concern is sharpened daily by dwindling reserves of merchantable ore, rapidly expanding demand by the steel industry and the ever approaching competition of foreign mines. It is certain that all of these factors have combined to make the Lake Superior district the busiest, most rapidly expanding single segment of the industry.

Production in 1950 was sharply up. This reversed a trend of the past several years, and the 79,970,000 ton output was within seven percent of 1942's all-time record. In the national iron picture, the district held its own by accounting for 81 percent of total production. Minnesota was responsible for 67 percent.

Prices went up, too. The year started with the quoted price at $4.50 per ton, which was increased to $5.00 for a yearly average of $4.90. Contracts for 1951 shipment call for a $5.50 price, or $1.69 per

On the Minnesota Iron Ranges the swing was toward beneficiating low-grade ores. A typical plant is that of the Charleson Iron Mining Company, Virginia, Minnesota.

tons above the price prevailing in 1948.

Production of the above tonnage required several departures from the normal. The shipping season was short, starting a full month later than usual. The first ore boat out of Escanaba, Michigan, sailed on April 19th, and not until nine days later was ice sufficiently cleared to permit sailings from the twin ports at the west end of the lake. The shipping season closed December 11th.

Of course, maximum effort by all concerned was mainly responsible for the showing. However, Oliver Iron Mining Company, in July, instituted all-rail shipments of ore from its Godfrey mine at Hibbing, Minnesota, to Pittsburgh, Pennsylvania. Coal cars were pressed into service, ore was loaded into each end of the cars (over the trucks), and about 3,500,000 tons were handled up to the time freezing weather stopped the practice in November. In December, experimental shipments using calcium chloride to prevent freezing were being made.

New plant construction was pushed ahead rapidly. At least six new washing and HMS concentrators were put into operation during the season. In addition, much experimental work with new equipment and new methods was carried forward. Included in the new plants were two HMS circuits in the Hill Annex mill of Inter-State Iron Company at Calumet, Minnesota, a washing plant of Wheeling Steel Corporation, at Mountain Iron and re-erection of the Zontelli Brothers HMS mobil mill to treat waste dumps at Iron Mountain.

Inter-State Iron Company started to strip a small, deep deposit in the Gilbert, Minnesota, section. Ore will be hoisted in a pair of skips operating on the incline of the pit's wall, and a screening and washing plant will be built. Inter-State's parent company, Jones & Laughlin Steel Corporation, has started shaft sinking at its Tracy mine near Negaunee, Michigan. Western Knapp Engineering has been retained to design the surface plant; and sometime in 1954, after an expenditure approaching $10,000,000 the property will start producing about 1,000,000 tons annually.

Production of Copper and Iron Ore in Michigan from 1941 Through 1950

Year	Copper	Iron Ore*
1941	46,440	15,201,619
1942	45,679	16,129,474
1943	46,764	14,510,357
1944	42,421	15,425,788
1945	30,401	11,865,624
1946	21,663	8,756,802
1947	24,184	12,965,482
1948	27,777	12,896,478
1949	19,506	11,199,024
1950†	25,338	12,850,000

*Gross tons
†Estimated

These two developments mark a trend toward opening smaller orebodies by underground methods, or by deep pits with hoists, that is expected to increase during the next several years.

On the beneficiation scene, the M. A. Hanna Company was extremely active. Experimental work with the treatment of fine sized particles in a Dutch State Mines cyclone separator was carried forward at the Buckeye mine, and plans were laid for building a full-sized plant. At the Maroco mine on the Cuyuna Range, a Wemco drum separator was used in the HMS circuit throughout the season. Hanna also tested Humphreys Spiral Concentrators and planned to install a bank of them at the Patrick mine to reclaim material from the washing plant tailing pond.

Efforts to solve the problems still standing in the way of commercial production of blast furnace feed from taconites went forward at an increased tempo. The big announcement was, probably, that Reserve Mining Company had been brought under the ownership of Republic Steel Corporation and Armco Steel Corporation. Under the management of Oglebay, Norton and Company, a plant mill will be erected at Beaver Bay, the first unit of which would produce 2,500,000 tons of concentrate annually. The project involves the building of a 47-mile railroad and a breakwater and dock facilities in addition to the milling plant. The initial cost is estimated at $60,000,000. The facilities would be expanded to some 10,000,000 tons annually at a later date.

Oliver Iron Mining Company continued work on the erection of its sintering and nodulizing plant to conduct experimental work on fine hematite, and expects to start operating at least one circuit at the beginning of the 1951 season.

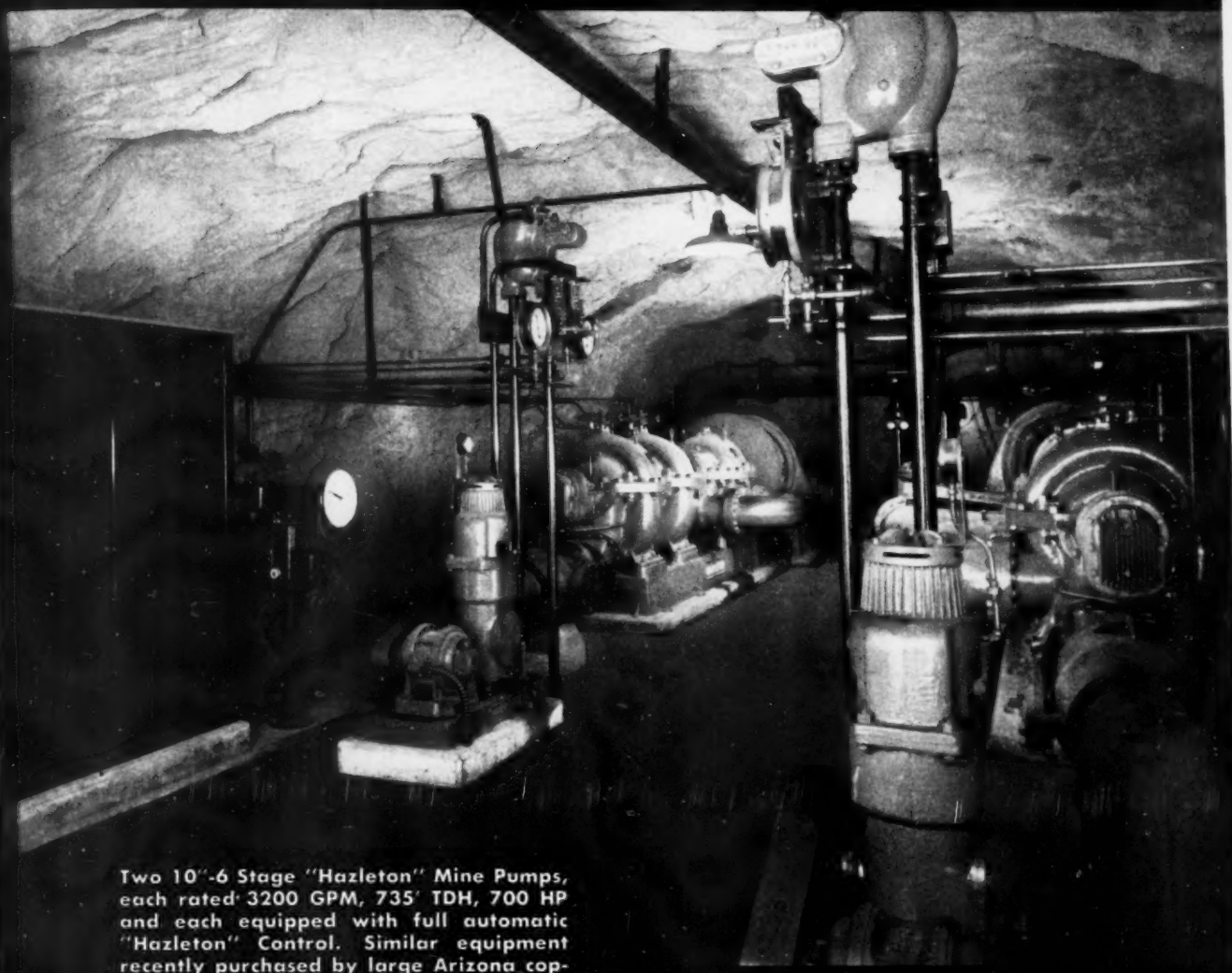
Stripping on the Mesabi was started at several new locations. Among the more impressive is the Morton Ore Company's job which employs a 30-yard dragline and conveyor belt. Some 35,000,000 yards will be moved during the next five years. Oliver Iron Mining Company also started to strip with a dragline and conveyor system at its Gross Marble property. This unit is, however, somewhat smaller than that at the Morton. Pickands Mather & Company started draining its Carson Lake property preparatory to stripping.

Continued on page 64

Hazleton

MINE PUMPS & AUTOMATIC CONTROL

- Controls Pumps by Water-Level or Time Clock
- Absolute Priming—No False Primes
- Equipment Fully Protected in Event of Failure
- Alarm in Event of Failure
- No Attendants Required
- Low Cost—Economical—Self Liquidating
- Control Adaptable to Existing Installations
- Designed & Manufactured by Engineers with Over 35 Years Experience in Mine Pumping.



Two 10"-6 Stage "Hazleton" Mine Pumps, each rated 3200 GPM, 735' TDH, 700 HP and each equipped with full automatic "Hazleton" Control. Similar equipment recently purchased by large Arizona copper mine.

BARRETT, HAENTJENS & COMPANY

HAZLETON, PENNSYLVANIA

Manufacturers of Unexcelled Equipment for the Mine and the Preparation of Minerals

Pittsburgh, Pa. Birmingham, Ala. Huntington, W. Va. Phoenix, Ariz.

Continued from Page 62

Shipment of Iron Ore in Gross Tons from Minnesota, Michigan and Wisconsin by Some Companies and Mines in 1950

Company and Total Shipments	Mine	Gross Tons
Charleson Iron Mining Co.		
191,139	Charleson (concentrate)	191,139
Cleveland-Cliffs Iron Co.		
1,882,919	Athens	608,163
	Cambria-Jackson	446,632
	Cliffs-Shaft	587,608
	Lloyd	184,764
	Maas	619,828
	Mather	1,308,584
	Tilden	115,231
	Lake	21,057
	Spies-Virgil	257,838
	Agnew	350,432
	Alworth	1,405
	Atkins	403,393
	Canisteo	678,923
	Hawkins	591,603
	Hill-Trumbull	543,405
	Holman-Cliffs	872,466
	Sargent	242,536
	Wanless	39,779
E. W. Coons Co.		
566,071	Commodore	53,623
	Commodore (concentrates)	42,371
	Genoa-Sparta	302,555
	Genoa-Sparta (concentrates)	167,522
M. A. Hanna Co.		
12,115,466	Mississippi No. 2	85,368
	Mississippi No. 3	313,962
	Stein	5,144
	Mesaba Chief	106,532
	Bray	742,493
	Wabigon	56,353
	Norpac	31,042
	Impro "B"	202,161
	Buckeye	681,740
	Section 18	495,588
	Argonne	248,430
	Perry	410,111
	Douglas	118,864
	Duncan	585,397
	Dunwoody	187,317
	Harrison	19,430
	North Harrison	224,654
	Halobe	493,354
	Hoadley	760
	Quinn	4,435
	Kevin	265,862
	Olson	307,868
	Patrick	401,812
	Patrick Annex	143,188
	Galbraith	382,770
	Wyman	189,040
	Weggum	167,464
	Weggum South Longyear	336,015
	South Agnew	817,349
	Agnew	33,442
	North Eddy	45,583
	Bengal-Tully	163,682
	Hiawatha	590,885
	Homer	501,463
	Wauseca	591,342
	Richmond	224,168
	Onondaga	82,487
	Alstead Group	167,952
	Maroco	10,741
	Huntington	19,579
	Feigh Group	508,152
	Mangan Joan	65,114
	Mangan Stai	102,679
	Louise	60,377
	Portsmouth	600,446
	Spirng Valley	321,671
Haley-Young Mining Co.		
235,807	Minnewas	92,144
	Elbern	143,663
Inland Steel Co.		
1,434,742	Morris Mine	307,352
	Greenwood Mine	86,471
	Sherwood Mine	414,618
	Bristol Mine	105,017
	Armour No. 1 Mine	276,461
	Armour No. 2 Mine	244,818
Inter-State Iron Co.		
3,510,053	Hill Annex	751,682
	Sullivan No. 2	20,436
	Grant	363,183
	Columbia	789,674
	Missabe Mt. (N ½—NE ¼)	691
	Sauntry	263,784
	Longyear	984,586
	South Longyear	336,015
W. S. Moore Co.		
632,105	Alice (direct)	26,121
	Atkins (Moore Stockpile)	20,025
	Chieftain	42,053
	Forsyth	9,788
	Hanna	105,132
	Pilot	18,763
	Prindle	291,566
	Prindle Stockpile	57,892
	Yawkey	60,765
North Range Mining Co.		
397,357	Blueberry	195,764
	Champion	125,680
	Book	75,913
Oglebay Norton & Co.		
1,535,732	Montreal	1,102,828
	Eureka	432,904
Oliver Iron Mining Co.		
35,194,541	Hull-Rust Group	5,715,162
	Morris	403,570
	Pillsbury	270,624
	Godfrey Glen	13,169
	Monroe Group	2,658,719
	Sherman Group	5,819,277
	Godfrey U. G.	611,776
	Mountain Iron Group	2,857,477
	Rouchleau Group	5,127,553
	Spruce U. G.	266,195
	Spruce O. P.	1,667,298
	Fayal U. G.	162,318
	Fayal O. P.	533,218
	Canton Group	1,504,042
	Walker Group	1,269,915
	Arcturus Group	459,048
	Gross Marble Group	1,155,958
	Lake Superior (Soft)	5,668
	Niles-Douglas	1,039
	Midway-Seville	200,221
	Mott	216,545
	Sauntry	364,042
	Gilbert	2,015,376
	Miller Extension	35,368
	Delaware No. 1	24,804
	Geneva	641,960
	Pioneer	690,521
	Sibley	318,576
	Soudan	186,102
Pacific Isle Mining Co.		
354,878	Lamberton	160,066
	Smith	4,376
	York	132,772
	Miscellaneous	57,664
Pickands Mather & Co		
12,775,099	Miller Mohawk	228,892
	Erie Prelim'y Plant	59,209
	Embarrass	1,201,503
	Biwabik	252,546
	Corsica	332,718
	Wade-Helmer	396,236
	Albany	298,218
	Scranton	1,366,869
	Mahoning (D)	2,640,567
	Bennett	597,796
	Danube	530,844
	Mahnomen	246,855
	Sagamore	426,825
	Zenith	455,327
	Cary	598,791
	Newport	697,643
	Anvil-Palms-Keweenaw	546,942
	Plymouth	317,459
	Sunday Lake	513,435
	Volunteer	113,616
	Davidson	337,969
	James	179,121
	Buck Unit	435,687
Republic Steel Corp.		
1,868,242	Tobin	406,993
	Penokee	566,599
	Susquehanna	888,650
Rhude & Fryberger		
307,368	Pennington	184,176
	Troy	106,641
	Seville	16,551
Snyder Mining Co.		
852,995	Webb	523,094
	Virginia	209,618
	Shenango	120,283
Stanley Mining Co.		
404,835	Mary Ellen (concentrate)	404,835
Zontelli Brothers, Inc.		
261,726	Virginia	215,212
	Martin	12,485
	Penokee	34,029

MONTANA

Lead-zinc output rises; metal and mineral plants abuilding

During 1950, lead and zinc output rose to post-war high levels, and Montanans saw the start of a movement they have predicted for years:

Harvey Machine Company, after consideration of and negotiation for a part of the Basic Magnesium plant at Henderson, Nevada, brought its plans to Montana and began construction of an aluminum plant near Kalispell. Expected to be completed in 1952 at a cost of $11,000,000, using power made available by Hungry Horse dam, Harvey's plant will process refined bauxite ore to produce 70,000,000 pounds of aluminum yearly.

At Silver Bow, 10 miles west of Butte, Victor Chemical Company started construction of a $5,000,000 plant to produce 400 to 600 tons of elemental phosphorus daily from Phosphoria ores from the now-developing underground mine at Maiden Rock, 30 miles south of Butte.

At Butte, Anaconda Copper Mining Company put its new precipitating plant into operation. The new plant, a modern replacement of the former plant, is designed for simplified continuous operation, and at year's end, it was recovering 500,000 pounds of low-cost copper monthly.

Also at Butte, ACM Co. pushed toward completion of underground development for the Greater Butte Project. Announcement was made of outstanding metallurgical results in the test milling of samples from the upper 30,000,000 tons of Greater Butte ores; the process to be used, called the L. P. F. (leach, precipitate, and float) process, has yielded test recoveries of about 85 percent.

In still another project, ACM Co. made plans to drive an adit approximately 6,000 feet to the workings of the Alice and Lexington mines. During the year, despite difficulties in procuring labor, the company pushed its production of zinc and lead to record post-war high levels, and was largely responsible for the state's increasing production.

North Butte Mining Company started construction of a plant at the Granite Mountain mine for deliberate leaching, copper precipitation, and the recovery of approximately 5,000,000 pounds of low-cost copper annually.

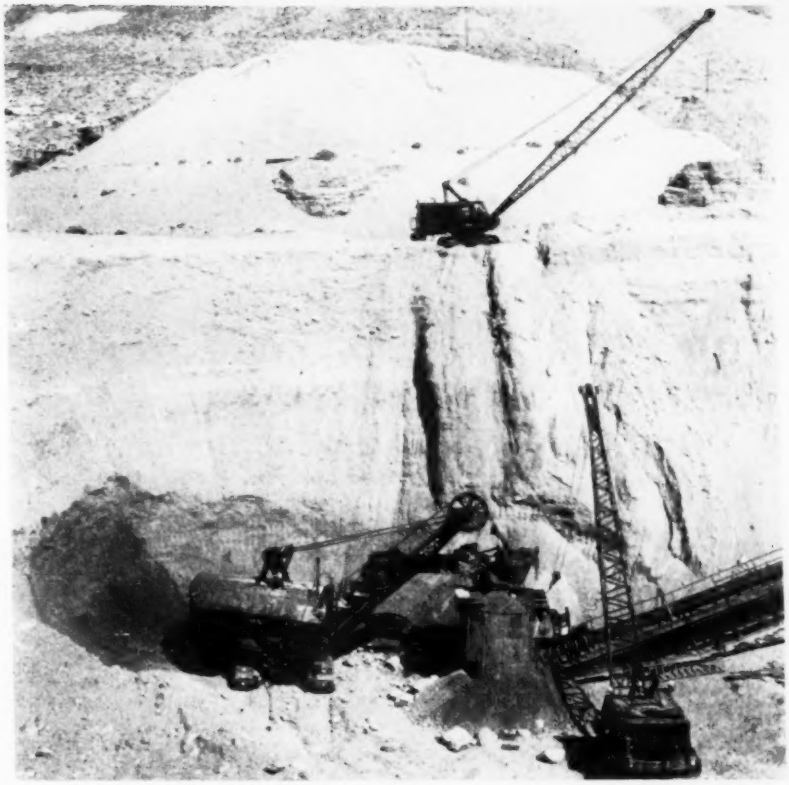
At Philipsburg, American Machine & Metals, Inc's Trout Mining Division lost its mill by fire, rebuilt the mill, and expanded production of battery-grade manganese dioxide. Also at Philipsburg, the United States' No. 1 battery-grade producer, Taylor-Knapp Company, continued production from its mines and mills.

At Alta mountain southwest of Jefferson City, Ed Lahey finished the year shipping approximately one car of silver-lead ore daily from his new openpit at the Alta mine.

From the Calvin mine six miles west of Melrose, Commonwealth Lead Mining Company finished the year making regular shipments of lead-silver-carbonate ore. Near Virginia City, the Cornucopia mine continued to ship siliceous gold-silver ore at the rate of three cars weekly.

At Superior, Nancy Lee Mines, Inc., re-acquired the Nancy Lee mine and pushed mine development for maximum output of silver-lead ores for its 125-ton flotation mill. Morning Glory Mines, Inc., 15 miles northwest of Troy, completed and put into operation its 125-ton flotation mill and made its first shipments of gold-silver-lead-copper concentrates.

The outlook for 1951 is for rising zinc production (it rose 23 percent in 1950 to a production of 133,600,000 pounds—second only to Idaho in the United States), for increased lead production, and for further possible locations by heavy industries which need power, land, water, and Montana's abundance of mineral.



The mining operation of 1950 was that of the Round Mountain Gold Dredging Company at Round Mountain, Nevada.

NEVADA

Trend continues upward: new gold, copper, metal plants

Though copper accounted for 58 percent of Nevada's $38,000,000 five-metal (gold, silver, copper, lead, zinc) production, the interest of most mining men was centered on gold. In a year during which gold mining, as such, suffered in other states, Nevada saw one large new gold operation, saw a number of smaller developments, and saw a 36 percent increase in the dollar value of gold production (1950: $6,188,000).

At Round Mountain, 57 miles northeast of Tonopah, the Round Mountain Gold Dredging Corporation put into operation a continuous-mining plant that is the subject of much thought and study today. Probably the most important advance in mining in 1950, the Round Mountain system (used at Round Mountain to mine 17,000 tons of alluvial gold ore daily) is a new concept in metal mining that is a step toward continuous mining of harder ores.

Southwest of Battle Mountain, Natomas Company processed about 12,000 yards daily with its new deep-digging bucketline, and became Nevada's No. 3 gold producer.

Getchell Mine, Inc., by the addition of new crushing facilities and a sulfide circuit which complements the oxide-cyanide circuit of the Getchell mill, brought milling capacity up to 1,500 tons daily. At the end of the year Getchell made plans to resume mining of tungsten.

Production of Gold, Silver, Copper, Lead and Zinc in Montana from 1941 Through 1950

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons
1941	246,475	12,386,925	128,036	31,259	60,710
1942	146,892	11,188,118	141,194	20,050	54,715
1943	59,586	8,450,370	134,525	16,324	37,696
1944	50,021	7,093,215	118,190	13,105	36,127
1945	44,597	5,942,070	88,506	9,999	17,403
1946	70,507	3,273,140	58,481	8,280	16,770
1947	90,124	6,326,190	57,900	16,108	45,679
1948	73,091	6,930,716	58,252	18,411	59,095
1949	52,274	6,327,025	56,611	17,996	54,195
1950[1]	53,200	6,388,700	53,700	18,700	66,300

[1]Estimated

Production of Gold, Silver, Copper, Lead and Zinc in Nevada from 1941 Through 1950

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons
1941	366,403	5,830,238	78,911	9,623	15,129
1942	295,112	3,723,435	83,663	5,378	10,197
1943	144,442	1,620,280	71,068	4,790	13,647
1944	119,056	1,259,636	61,232	6,605	20,699
1945	92,265	1,043,380	52,595	6,275	21,457
1946	90,680	1,250,651	48,616	7,175	22,649
1947	89,063	1,337,579	49,603	7,161	16,970
1948	111,532	1,790,030	45,242	9,777	20,288
1949	130,399	1,800,209	38,058	10,626	20,443
1950[1]	176,830	1,564,920	53,370	9,590	21,630

[1]Estimated

By late 1950, Kennecott Copper Corporation was producing at a record rate of about 20,000 tons of copper ore daily from the Ruth pit. With a good year of production, and with increased efficiency in the pit, Kennecott boosted copper production. In November, the company began stripping to develop a new pit, the Kimbley pit, at nearby Lane City.

Southwest of the town of Kimberley, Consolidated Coppermines Corporation began development of and put into production the new Morris pit on the south slope of Old Glory hill. Production is now 30,000 tons of ore and waste daily by truck pitting.

At Pioche, Combined Metals Reduction Company retained its position as No. 1 lead and zinc producer in Nevada. With mill-head tonnage up to 1,050 tons daily, the company was pushing completion of a pre-flotation HMS plant to recover manganese carbonates from lead-zinc-sulfide ores. At Henderson, Combined Metals acquired rights to part of the old Basic Magnesium plant and was building a refinery for processing manganese, lead, and zinc concentrates from Pioche.

The old Basic Magnesium plant at Henderson, through a series of power assurances and property leases to various metal companies, seemed assured of becoming the heart of Nevada's chemical and metal industry. Units of the old plant had been leased to Titanium Division of National Lead Company, Western Electro-Chemical Company, Stauffer Chemical Company, CMR Co. (above), and others. Power, land, water, and a good industrial plant site were the assets that, at the close of 1950, saw millions of dollars in metal-chemical investments pouring into the huge World War II magnesium plant.

Near Henderson, also, Manganese, Inc. bought the Three Kids deposit (5,000,000 tons of 18 to 25 percent Mn) and prepared to spend approximately $1,000,000 to start production of manganese which would be processed to ferro manganese and spiegeleisen at the old Basic Magnesium Plant.

NEW MEXICO

ASARCO's Deming mill started big potash expansion underway

Renewed activity in base metal mining was the feature of 1951 in New Mexico. The year began with cutback operations and a slowly increasing demand. By the time the price had crawled back to 22½ cents in mid-April, the Kennecott Copper Corporation's Chino Division went back on a seven-day schedule at its Santa Rita and Hurley operations in Grant County. The firm's new 126-foot-long reverberatory furnace at the Hurley smelter was put into use, making possible continuous operation with no further need for shutdowns for periodic repairs.

Lead-zinc producers, who shut down almost entirely in mid-1949, began to roll up their sleeves and get back to work with the price advances of 1950. The Peru Mining Company was among the first to start, reopening its Kearney mine and Deming mill, Luna County, in February, and its Pewabic mine at Hanover, Grant County, in October. Operations at all three locations were expanded in December. Kennecott's Chino Division reopened its Oswaldo No. 1 zinc mine, and later opened its new Oswaldo No. 2 mine, both near Santa Rita.

The American Smelting and Refining Company's Groundhog Unit at Vanadium in Grant County, after a month-long strike, began continuous operations in June, including work in its new 2,000-foot Star shaft. Shut down during the low price months, the company had worked on an extensive expansion pro-

Production of Gold, Silver, Copper, Lead and Zinc in New Mexico from 1941 Through 1950

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons
1941	27,845	1,328,317	73,478	4,668	37,862
1942	11,961	676,170	80,100	4,608	46,461
1943	5,563	463,583	76,163	5,723	59,524
1944	6,918	535,275	69,730	7,265	50,727
1945	5,604	465,127	56,571	7,662	40,295
1946	4,009	338,000	50,191	4,899	36,103
1947	3,146	515,833	60,205	6,283	44,103
1948	3,414	537,674	74,687	7,653	41,502
1949	3,249	380,855	55,388	4,652	29,346
1950[1]	3,200	322,000	66,300	4,100	28,500

[1]Estimated

gram and had built a lead-zinc flotation mill at Deming.

The United States Smelting, Refining and Mining Company resumed operations in its Bullfrog No. 1, Slate, and Princess shafts at Bayard in Grant County. The Hornet Mine near Hachita in Grant County, which kept up a steady production of lead and zinc concentrates during the price crisis, continued operations. Many smaller producers got back to work, such as the Royal John near Silver City, Grant County, and the Nitt, North Juanita, Kelly, and Linchburg mines near Magdalena, Socorro County. The Linchburg produced on a curtailed basis during the price ebb; the other mines were closed down.

The Portales Mining Company of San Antonio in Socorro County, after several months shutdown of its concentrating plant for remodelling and addition of new equipment, resumed operations and was handling 75 tons a shift in producing a lead concentrate.

The Hurlow Mining and Milling Company of Bingham in the Hansonberg mining district, Socorro County, a new firm in the area, went on a 16-hour daily schedule late in the year producing a lead-sulphide concentrate. The company finished 1950 with the expectation of soon making a marketable barite product.

Irvin and Bishop of Houston, Texas, began turning out a highgrade lead concentrate and drilling-mud-grade barite during the year. The products came from the J. W. O'Brian mill at Rincon, Dona Ana County. As the year ended, the firm was almost ready to start the wheels turning in its new barite grinding and sacking plant near San Antonio.

After being strikebound for 75 days, the three established Carlsbad potash firms—United States Potash Company, Potash Corporation of America, and International Minerals and Chemical Corporation—resumed operations in February. Total mine production at the year's end was estimated at 5,252,901 tons. International, embarked on a $1,500,000 expansion program, had its No. 3 shaft down several hundred feet by the year's end. The shaft will be used to move men and equipment. The No. 4 shaft site was readied for sinking. The Duval Sulphur and Potash Company progressed with its $7,500,000 development project, which will include a plant and two shafts. Production was expected to start in 1951.

Southwest Potash Corporation blueprinted a $10,000,000 program to include two 1,000-foot shafts and a refinery. Production was expected to start late in 1952 with the first year's output tentatively scheduled at 185,000 tons.

New Mexico hopefully thought it looked radioactive as 1950 closed, following discoveries of uranium late in the year. Quickly prospected by private interests during 1950, a promising location near Grants, Valencia County was being explored at the year's end by the Atchison Topeka and Santa Fe Railway Company on whose land most of the mineralization occurs.

The critical shortage of manganese stepped up activity in that branch of the industry during the year. The GSA gave the U. S. Ferro Metals Corporation of Pittsburgh, Pennsylvania, a contract for 50,000 tons of manganese. The firm said it planned a $400,000 metallurgical plant at Deming to handle the contract and carried the plan into the new year. Production of iron-manganese ore was maintained throughout the year at the Boston Hill mine of the Luck Mining and Construction Company near Silver City. Shipments were made to the Colorado Fuel and Iron Corporation at Pueblo, Colorado.

Perlite production continued to grow during the year under the guiding hand of the New Mexico Mining and Contracting Company of Albuquerque, contractor

for the Great Lakes Carbon Corporation. Although final 1950 production figures are not available, output was "much greater" than the estimated 10,500 tons of 1949. Great Lakes' processing plant at Socorro was in constant use during the year.

Pumice production also continued its boom with several small firms entering the field during the year. The great bulk of the production continued to come from the Pumice Corporation of America, putting out abrasive pumice, and the Pumice Aggregate Sales Corporation, Santa Fe Pumice Company, and General Pumice Company producers of pumice aggregate.

Improvement of the fluorspar market brought some increase in the mining of the product. In southwestern New Mexico, production was continued by the General Chemical Company at its Burro Mountain mine. Mining Engineer H. E. McCray developed and worked some fairly extensive fluorspar deposits near Deming, and considerable output was maintained by J. H. Harrison in Grant County. The Zuni Milling Company of Albuquerque, whose deposits near Grants were closed or curtailed during much of 1949, kept up fairly steady production in 1950.

Sheet and scrap mica was shipped by the San Miguel Mine, Milling and Smeltering Company from its operation near Las Vegas, San Miguel County. The Great Western Mining Company was preparing a 500-acre site near Mora, Mora County, for openpit mica mining that was expected to run 20 tons a day.

Shut down during 1948 and 1949, the Harding mine near Dixon was the nation's top beryl producer. Owner Arthur Montgomery gave the New Mexico Mining and Contracting Company a contract to mine lithium-bearing ores, and production was begun during the year.

Molybdenum production was continued in 1950 as a by-product of the Hurley mill of the Kennecott Copper Corporation's Chino Division and by the Molybdenum Corporation of America at its Red River operation in Taos County.

OREGON

Exploration for bauxite, nickel and asbestos during 1950

Nonmetallic production in Oregon continues at a high rate. Metallic mining is at a very low ebb as it has been ever since the end of World War II. After the DPA of 1950 became law in September, the somnolent strategic minerals industry showed signs of resurgence because of expectations of increased market prices of war minerals, some of which are critically low in the national stockpile.

In approximate order of importance

Mine Production of Gold and Silver in Oregon from 1941 Through 1950

Year	Gold Ounces	Silver Ounces
1941	96,565	276,158
1942	46,233	87,376
1943	1,097	10,527
1944	1,369	20,243
1945	4,467	10,461
1946	17,598	6,927
1947	18,979	30,379
1948	14,611	13,596
1949	16,226	12,195
1950[1]	10,600	12,830

[1]Estimated

Oregon's commercial nonmetallic minerals are sand, gravel and crushed rock; limestone and portland cement; clay; perlite, pumice, and expanded shale; diatomite; silica; and gem stones.

During 1950 Dant & Russell, Inc., Dantore Division, sold 500,000 three-cubic-yard bags—a new high record. This company is turning out a perlite acoustical tile at a plant located on the railroad near the mine at Frieda, south of Maupin, in Wasco County.

Pumice production is centered around Bend and Chemult in Deschutes and Klamath counties respectively. Producers are putting out a carefully prepared product. A pumice plaster sand which gives a hard finish is being marketed by a Bend producer. One producer at Redmond uses his production in making pumice concrete pipe and has built up a large business in culvert and irrigation pipe.

The Great Lakes Carbon Corporation operated at capacity its diatomite quarry and plant at Lower Bridge on the Deschutes River near Terrebonne. Output is marketed under the trade name of Dicalite and has a large variety of uses in the chemical and construction industries. The Bristol Silica Company, Rogue River, Jackson County, continued to mine and process both quartz and granite from quarries in Jackson County.

Gold lode mining was almost at a standstill. There were a few small underground operations but the state's lode gold production was principally a by-product from sulphide ores shipped to copper smelters. The principal production of shipping ore was from the Buffalo mine in Grant County and the Champion mine in eastern Lane County. Two cars of gold ore were shipped to the Tacoma smelter from the Humdinger mine in Josephine County. Two gold dredges, both bucketline, operated throughout the year in eastern Oregon. The Baker Dredging Company sold out during the year to the Powder River Dredging Company which is digging in the lower part of Sumpter Valley.

There was no chrome production during the year. A small amount of diamond drilling was done at the Oregon Chrome mine in Josephine County. Former chrome producers held meetings in Grants Pass in order to present a unified program for a suitable price to the DMA.

Exploration of a low-grade antimony deposit in Crook County was conducted during both 1949 and 1950. Metallurgical testing aimed at producing metallic antimony was done at one property in southern Oregon.

A small amount of auger-hole drilling was done in the fall by Alcoa Mining Company on land owned by the company. All other bauxite areas owned or controlled by the company have been drilled and sampled so that an accurate estimate of quantity and quality was made.

During the year the Asbestos Corporation of Canada explored by diamond drilling and trenching an asbestos deposit located about five miles north of Mt. Vernon in Grant County. The company also trenched a deposit on Butte Creek near the Middle Fork of the John Day River and examined several other deposits in eastern Oregon.

The M. A. Hanna Company leased the Nickel Mountain nickel deposit near Riddle in southern Douglas County where a large amount of diamond drilling was done by Freeport Sulphur Company during World War II. The Hanna Company is investigating the metallurgy and economics of producing nickel from this large low-grade deposit of oxidized ore.

Production of Gold, Silver, Bentonite and Feldspar in South Dakota from 1941 Through 1950

Year	Gold Ounces	Silver Ounces	Bentonite Tons	Feldspar*
1941	600,637	170,771	57,139	59,015
1942	522,098	186,937	88,149	64,842
1943	406,444	85,886	124,528	70,913
1944	11,621	5,445	169,803	64,806
1945	55,948	26,594	178,374	68,374
1946	312,247	86,903	180,707	74,580
1947	427,194	111,684	189,450	58,959
1948	377,850	94,693	156,701	54,037
1949	464,650	109,383	137,576	52,252
1950	580,436	133,450	145,000	45,000

*Crude sold or used (long tons)
†Estimated

SOUTH DAKOTA

Gold production makes large gain; lithium production up

The total value of gold and silver produced in South Dakota during 1950 was $20,436,039 as compared with a total of $16,363,011 in 1949. Preliminary production figures indicate a total output of 580,436 fine ounces of gold and 133,450 fine ounces of silver. The Homestake Mining Company of Lead, operators of the largest gold producing mine in the United States, and the Bald Mountain Mining Company of Trojan were the principal producers. The Homestake Mining Company operated continuously and at a uniform rate throughout the year treating an average of over 3,000 tons of ore per day, with production of both gold and silver exceeding the output for 1949. The Bald Mountain Mining Company also operated continuously during the year reporting about a 71 percent increase in gold production over that of 1949, but with a decrease of 26 percent in silver production.

The Southern Mines, Inc. at Keystone, started milling operations in its new combination-flotation-cyanidation plant at the Juniper mine near Keystone in December 1950. Development of the mine began in October 1949 and construction of the mill began in June 1950. The mill has a capacity of approximately 75 tons a day in the flotation section. The concentrates from this section are cyanided for the final recovery of gold. Only a minor amount of silver is present in the ore. Lloyd Berck of Keystone is president of the company and A. I. Johnson also of Keystone is general engineer.

Approximately 7,000 tons of spodumene, one of the principal lithium-bearing minerals, was produced in South Dakota during 1950, or about 500 tons more than the final figures for 1949. The Lithium Corporation of America was the principal producer and the only operator to concentrate spodumene by mechanical means. Its HMS plant located near Keystone was in continuous operation throughout the year except for minor interruptions. The Etta, Ingersoll, Dike, and Beecher mines were the largest producers of hand-sorted spodumene during the year.

During the latter part of the year considerable interest was developing in the pegmatites of South Dakota as a possible source of such critical minerals as beryl, sheet mica, columbite, and tantalite, however, no new operations were reported as a result of this interest and the production of these minerals which is incidental to feldspar mining was not raised appreciably above normal.

Indications are that the high level of bentonite production established during the last several years was continued in 1950. No extended shut downs were reported by any of the major operators in the state. The principal producers of bentonite in the state of South Dakota are the Eastern Clay Products, Inc. and the American Colloid Company with processing plants near Belle Fourche and the Baroid Sales Division of the National Lead Company whose plant is located in the northeastern part of Wyoming.

Feldspar production also continued at a high level during the year. The two grinding plants of the Consolidated Feldspar Corporation located at Keystone and Custer were in continuous operation throughout the year.

UTAH

Kennecott opens new refinery; Marysvale mines uranium

An increase of 30 percent over the previous year in total value and 45 percent greater tonnage would ordinarily be considered satisfying gains for the mining industry in Utah. However, a close breakdown of the record for the year reveals critical periods of uncertainty for individual operations. The performance of the Utah Copper Division of Kennecott Copper Corporation was most satisfying and accounted for the large production in copper, gold, and silver. For other operators, the year was far from satisfactory as most of them were closed down for the greater part of the time. Management was glad that the year ended better than it began.

The most noted decline for 1950 was in the output of zinc-lead ore. Strikes, a disastrous fire at the United States Smelting, Refining & Mining Company's mine at Lark, and the paralyzing effect of the collapse of the prices paid for zinc and lead restricted production in some properties to the last quarter. The number of producing mines continued downward from 95 in 1949 to 85 in 1950.

The highlight of the year was the fact that the Utah Copper Division of Kennecott operated successfully without serious interruption thus assuring continuous activity at the Garfield smelter of the American Smelting and Refining Company. The United States Smelting, Refining & Mining Company was plagued by labor differences, the fire mentioned above, and unfavorable prices. Its Midvale smelter and mill were closed for two months during the year. The Lark properties were worked only part of the year resulting in a decline in output of zinc-lead ore for the West Mountain District where both Utah Copper and United States Smelting operate and which ac-

counted for 93 percent of the State's total production value. The district produced 94 percent of the gold, 71 percent of the silver, 99 percent of the copper, 63 percent of the lead and 52 percent of the zinc value of the 1950 output. This prolific production of this one district alone in the State causes many to wonder if Utah is not rapidly approaching the status of being a "One-District" mining state.

Park City District contributed $5,753,944.00. Tintic District $4,384,146.00 and the remaining districts $1,285,564.00 of the state's grand total of $157,949,922.00. West Mountain District's production was 93 percent of this total or almost $147,000,000 against $10,000,000 for the balance of the state.

As the year ended, Park City was getting back to normal and three mines were busy—New Park Mining Company, Silver King Coalition Mines Company, and Park Utah Consolidated Mines Company. In the Tintic District only Chief Consolidated Mining Company kept aggressively at work. The necessity of keeping the lower workings of the mine unwatered forced difficult problems upon the management.

In September, Kennecott dedicated its $16,000,000 copper refinery at Garfield. Half of the Utah Division's copper output will be processed in this refinery, the capacity of which is around 12,000 tons monthly. The refinery is the "last-word" for beauty and utility. Incidental to its construction, ASARCO spent $3,000,000 to $4,000,000 to build a copper-anode plant, and another $7,000,000 to $8,000,000 to double the capacity of the acid plant subsidiary of the smelter.

Howe Sound Company pushed work on its cobalt smelter at Garfield, costing better than $1,000,000. This smelter, the first of its kind in the state, is expected to operate during the last half of 1951. Cobalt concentrates from the Calera mine in central Idaho will be smelted. The enterprise, energetically followed through by the Howe Sound Company, has great significance in the endeavor to free the United States from dependence upon foreign-produced strategic metals.

A new departure in mining is noted at the Dragon Consolidated Mining Company's mine at Tintic. Formerly a lead-zinc mine, the Dragon is employing more than 50 men to extract clay (halloysite). Shipments are made daily to a new $3,000,000 plant on the outskirts of Salt Lake City where its is processed by Filtrol Corporation. The product is chiefly a catalytic agent, used in refining oil, etc.

For security reasons much information on the search for fissionable materials is being withheld. The activity of hundreds of individuals scouring the Colorado Plateau, which covers southwestern Colorado and southeastern Utah, attracts attention because of the mixed success and failure of individual enterprises. The carnotite ores of the area are being extracted in increasing amounts. Thousands of feet of diamond drilling is being done. Government ore buying stations at strategic points and beneficiating plants are busy. At Marysvale, Utah, the autunite ores have aroused speculation that the openpit operations may result in large tonnage of low-grade secondary ore. Shaft sinking by the Vanadium Corporation of America and the Bullion-Monarch Mining Company

Production of Gold, Silver, Copper, Lead and Zinc in Utah from 1941 Through 1950

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons
41	356,501	11,395,485	266,838	69,601	42,049
42	391,544	10,574,055	306,391	71,930	45,543
43	390,470	9,479,340	323,989	65,257	46,896
44	344,223	7,593,075	282,575	52,519	38,994
45	279,979	6,306,545	226,376	40,817	33,630
46	178,533	4,118,453	114,284	30,711	28,292
47	421,662	7,780,032	266,533	49,698	43,673
48	368,422	8,045,329	227,007	55,950	41,490
49	314,058	6,724,880	197,245	53,072	40,670
50[1]	460,000	7,023,500	278,850	43,050	31,400

[1]Estimated

revealed that primary uranium ore exists. Vitro Chemical Corporation acquired the former Government-owned kalunite plant in Salt Lake City and is planning to process the stockpile assembled by the Government at Marysvale.

Interesting showings and discoveries were made during the year by prospectors, and 1951 may bring the answers to many questions regarding the extent and grade of uranium deposits in Utah.

WASHINGTON

Record lead output led by Pend Oreille; many mines developed

The keynote of the mining industry in the state of Washington during 1950 was productive activity. The number of metallic properties which produced and shipped a significant amount of ore increased by five. The number of properties under current development increased by 15. When combined, the number of properties producing, developing, and recently in production total approximately 96, again an increase over 1949.

The increase in the prices of silver, copper, lead, zinc, and tungsten has been responsible for most of this increased activity. The favorable results obtained from current exploration throughout the state have also encouraged continued development.

Production has substantially increased in Pend Oreille County as the American Zinc & Lead Smelting Company, as well as Pend Oreille Mines & Metals Company produced continually during the year. Active development and exploration programs were conducted by Columbia Lead & Zinc Company in the Z-Canyon area, by the Sullivan Mining Company at the leased Metaline Mining and Leasing Company's property south of the town of Metaline, and by the Jim Creek mine interests northwest of Ione. In 1950 Pend Oreille County was first in the production of lead and zinc and was second in total metallic production.

Stevens County, as usual, was a center of vigorous activity. It had eight producing mines, 28 properties under development, and four others, although now inactive, which produced within the past two years. Steady production was maintained by the Goldfield Consolidated Mines Company's operations at the Anderson and Deep Creek properties and by the Bonanza Lead partnership at the Bonanza mine. The Admiral Consolidated Mining Company, Pacific Mining Company, Farmer mine and Mullen properties also produced during the year.

Possibly more significant was the large number of properties undergoing promising exploration. Major company interests (including American Smelting and Refining Company, Anaconda Copper Mining Company, Coronado Copper and Zinc Company, and others) guided some of these development programs. It may be of interest to note that although Stevens County is not a leading producer of any individual metal, it continues to be among the leaders.

The Knob Hill Mines, Inc.'s gold property maintained the only major production in Ferry County. Production by smaller gold producers in the Republic district was curtailed due to complications caused by railroad car shortage and other adverse factors.

Okanogan County reflects the general increased activity, with the Alder Gold Copper mine at Twisp and the Kaaba Silver Lead Mines, Inc.'s mine near Nighthawk actively producing.

Chelan County held the ranking position as foremost copper producer in the state because of the large and efficient operation of the Howe Sound Company, Chelan Division. It was also the leading gold producer in 1950 and contributed substantially to the total silver and zinc production. During 1950 continuous production from the Lovitt Mining Company, a relatively new operation in the Wenatchee area, was responsible for an increase in the total production of gold. Continued and increased activity in the Blewett district by the Gold Bond Syndicate and associates was a feature during the year.

Kittitas County, although not contributing significantly to the total metallic production of the state, in 1950 increased in placer gold output materially over that of 1949.

Other counties also have shown increased activity with various properties under development in Whatcom, Snohomish, King, and Skagit counties. The Index Mining Company's Sunset Mine was diamond drilled by the U. S. Bureau of Mines.

Of interest was the excellent production record of the nonmetallic industry, which accounted for 78 percent of the state's total mineral production. Outstanding were the large portland cement producers including Lehigh, Northwestern, Superior, Spokane, and Olympic. Northwest Magnesite Company continued its operation, expanding production from the Red Marble quarry in addition to normal production from its other large quarries.

Production of Gold, Silver, Copper, Lead and Zinc in Washington from 1941 Through 1950

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons
1941	84,176	402,030	8,686	3,903	14,320
1942	75,396	369,038	8,030	4,851	14,398
1943	65,244	370,440	7,365	5,022	12,203
1944	47,277	321,608	6,164	5,825	11,904
1945	57,860	281,444	5,281	3,802	11,693
1946	51,168	264,453	4,527	2,987	11,329
1947	34,965	293,736	2,240	5,359	13,800
1948	70,075	375,831	5,665	7,147	12,638
1949	71,994	357,853	5,275	6,417	10,740
1950[1]	87,200	353,650	5,220	10,700	15,050

[1]Estimated

WYOMING

Nonmetallics looming larger; future developments planned

Mining in Wyoming during the year 1950, with the exception of iron ore, continued to be limited principally to the nonmetallics: bentonite, trona, cement rock, limestone, and sodium sulfate.

The Sunrise mine of the Colorado Fuel and Iron Corporation north of Guernsey continued to be an important factor in the western steel industry, supplying a large portion of the iron ore used by that company at its Pueblo, Colorado, steel plant.

Wyoming maintained the lead in production of swelling bentonite during 1949 and it is believed that this same position was maintained during 1950. Output came principally from the Black Hills area. The Benton Clay Products Company dried and ground bentonite in its mill

The Utah Copper Division of Kennecott Copper Corporation operated its openpit Bingham Canyon copper mine at near-record capacity during 1950.

Production of Bentonite, Feldspar and Iron Ore in Wyoming from 1941 Through 1950

Year	Bentonite Tons	Feldspar* Tons	Iron Ore Gross Tons
1941	145,574	11,846	985,85[illegible]
1942	139,410	13,953	957,02[illegible]
1943	159,252	.....	814,20[illegible]
1944	196,138	22,415	713,75[illegible]
1945	199,293	17,021	606,00[illegible]
1946	212,530	20,345	619,31[illegible]
1947	259,084	18,801	651,47[illegible]
1948	383,815	16,760	689,59[illegible]
1949	350,644	.....	539,55[illegible]
1950†	375,000	.....	480,00[illegible]

*Crude sold or used (long tons)
†Estimated

at Casper from bentonite deposits in central Wyoming. Most of its production went to the foundry trade. The United Products Company bentonite plant at Rock River went into production on dried-ground bentonite mined in the vicinity of Medicine Bow.

The Pratt Soda Company west of Casper and the Iowa Soda Products Company north of Rawlins each produced crude sodium sulfate. The product of both producers is reported to have gone into livestock feed.

The San Francisco Chemical Company at Leefe, Wyoming, continued production of raw, crushed and ground phosphate rock from its strip mine operation on the western border of the state. Phosphate Mines, Inc., of Kemmerer, continued development work of its properties above Camp Sussie, north of Kemmerer, and is planning to produce Rhenanian phosphate, a sintered sodium phosphate for agricultural use, as well as ground raw rock.

The deep trona mine of the Westvaco Chlorine Products Company (Food Machinery and Chemical Company) west of Green River enlarged its operation. A second shaft was sunk to the mine level and production increased. Trona (sodium sesquicarbonate) $Na_2Co_3.NaHCO_3.2H_2O$ is calcined in a plant at the mine to produce soda ash.

The Continental Sulphur and Phosphate Corporation has leased from the U. S. Bureau of Land Management 4,128 acres of phosphate land in the Wind River Mountains south of Lander. If research now going on at the University of Wyoming's Natural Resources Research Institute proves successful, and if priorities can be obtained, the company plans to produce concentrated superphosphate fertilizer at a plant to be constructed near Lander. Sulphuric acid would be manufactured from sulphur from the company's holdings in Sunlight Basin, Wyoming.

The Consolidated Feldspar Company of New Jersey has acquired feldspar deposits on Casper Mountain near Casper for a reported $50,000. Mining and processing operations probably will start in the near future. A small tonnage of mica has been produced from the Casper Mountains during the year.

A plan for completion and operation of the Laramie alumina plant by the U. S. Bureau of Mines has been proposed by United States Senator O'Mahoney. Alumina extracted from anorthosite (lime-feldspar), after sintering with soda and lime, leaves a waste material, principally a mixture of lime and silica which can be utilized for Portland cement manufacture by the nearby plant of the Monolith Midwest Portland Cement Company.

World-Wide Mining Report

ALGERIA—Phosphate and iron ore producers modernized and mechanized equipment in 1950. Zinc and lead production is being expanded.

AUSTRALIA—Base metal mining continues in a strong position. Lead output was up 15 percent in 1950. Gold production was only about one-half the annual prewar output.

AUSTRIA—Important production gains were made by the mining and smelting industry in 1950. New zinc smelting facilities are under construction.

BELGIAN CONGO—New records for copper production (176,000 metric tons) and for industrial diamond production (10,300,000 carats) were made in 1950. Tin mines expanded operations during 1950.

BRAZIL—Iron ore production reached a record high during the year. Development of the Amapá manganese deposits continued but production declined because of inadequate rail transportation.

CANADA—In 1950 annual production of all minerals exceeded $1,000,000,000 in value for the first time. Initial production of ilmenite ore was made at Allard Lake, Quebec. Base metal mining activity was the greatest of the century.

CHILE—Strikes hampered copper output during the year. Sulphide plant construction continued at the Chuquicamata mine of the Chile Exploration Company. The Bethlehem Iron Company was developing a new openpit iron ore mine. The Huachipato steel mill started operations.

COLOMBIA—Industrias Puracé ordered a new type of sulphur refining plant for processing low-grade ores.

COSTA RICA—The Miramar Mine and Exploration Company discovered and developed a high-grade ore shoot during 1950.

CYPRUS—The mining industry had a record year in both output and value of sales in 1950.

EIRE—A new lead-zinc flotation mill was placed in operation, and a Waelz plant is under construction to treat oxidized zinc ores.

FINLAND—The Outokumpu Company's four mines again accounted for the major share of metal production.

FRANCE—Monthly steel production reached an all time high in October. Potash output was 67 percent greater than prewar. Eleven mines produced lead-zinc ore.

FRENCH EQUATORIAL AFRICA—Alluvial diamond recovery exceeded 110,000 carats. Prospecting for lead, zinc and copper continues.

FRENCH MOROCCO—Twenty lead mines produced 65,000 tons of lead in 1950. Lead and zinc ore reserves were increased to 1,000,000 tons each of contained lead and zinc. An aerial tramway was under construction to facilitate manganese shipments.

FRENCH WEST AFRICA—Diamond production amounted to 128,000 carats. Iron ore deposits were under development.

GREECE—Geologic mapping was underway. A modern 250-ton per day flotation mill was constructed during 1950 to treat lead-zinc-silver ore at Laurium.

HONDURAS—The New York and Honduras Rosario Mining Company started a 3½-year exploratory program. Underground development at the New Idria Mining Company continued.

JAPAN—Mine and metal production increased over 1949. A new manganese plant is being erected in Hokkaido.

KENYA—Twenty gold mines were in operation during 1950. Kyanite production was 11,469 long tons.

MADAGASCAR—Graphite producers made remarkable progress in equipping their mines and plants. Phlogopite mica mines are being mechanized.

MALAYA—Production of tin, 57,540 long tons, was the greatest since 1941. New dredges started digging in 1950. Prospecting still lags.

MEXICO—Production of metals increased in 1950 over the 1949 output. Uranium mineralization was found in several states.

NICARAGUA—La Luz Mines, Ltd. doubled production to 1,900 tons per day. A new production record was made by the El Limon gold mine.

NORTHERN RHODESIA—Metal output and value reached record peaks in 1950. Copper output was 265,000 tons. Cobalt, lead and zinc production were also increased.

NORWAY—Important progress was made in rebuilding the plant of the Sydvaranger Iron Company.

PERU—A new manganese mine started shipments. Cerro de Pasco Copper Corporation's expansion progressed.

PHILIPPINE ISLANDS—Value of 1950 mineral production was 39 percent greater than that for 1949. Nine gold mines were in operation. Copper production was double prewar output.

SOUTHWEST AFRICA—Production of lepidolite was 6,168 tons in 1950. Vanadium output was double that of 1949 at 447 tons of V_2O_5 in lead and zinc concentrates.

SOUTHERN RHODESIA—Chrome production increased to 321,353 tons. Gold production declined but revenue increased due to devaluation. Beryl production was 932 tons.

SPAIN—Mineral production was generally up in 1950. Minas de Almaden sold over 120,000 flasks of mercury during 1950, the greatest annual sales in history.

SURINAM—The Surinam Bauxite Company planned a new mine at Rorac.

SWEDEN—Iron ore, iron and steel production was at a peak; expansion was underway.

TUNISIA—Phosphate production increased 5.75 percent and lead 28.6 percent over the corresponding 1949 output.

TANGANYIKA—Mineral output generally was lower than in 1949.

THAILAND (SIAM)—Tin mine rehabilitation was completed and tungsten mining was increased during 1950.

TURKEY—Murgul Copper Mines' flotation plant and smelter were completed in 1950. The chromite concentrator at Guleman mine was started in mid 1950 and produced 6,000 to 7,000 tons of concentrate.

UGANDA—A new wolframite mine was placed in operation during 1950. Tin and bismuth deposits were discovered during the year.

UNITED KINGDOM—In Cornwall, the operating tin mines were able to increase earnings with the higher tin prices but no mines were reopened. The China clay industry expanded and exports were 405,223 tons in 1950.

UNION OF SOUTH AFRICA—Gold ore tonnage mined increased 2.5 percent, but a lower grade and a 13.5 percent increase in costs adversely affected operations. Manganese production was increased to 831,145 tons. Diamond, chrome, asbestos and copper production were larger. Uranium recovery plant construction was announced by four Rand gold mines. In the Orange Free State goldfields 25 shafts were being sunk at year's end.

VENEZUELA—The Iron Mines Company of Venezuela completed mine, rail and Orinoco river port facilities necessary for large scale production and export of iron ore. A new HMS diamond recovery plant was installed by C. A. Venezuela del Diamente.

WEST GERMANY—Most mines operated at capacity. Maubach reserves of lead-zinc ore were set at 28,000,000 tons.

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PACIFIC "SLUSHMASTER"

World's best scraper! Designed by mining men for mining efficiency. Digs in, gets a *full* load *in a single pass*, regardless of type or size of material or slope of muck pile. Weight distribution assures maximum digging ability. Balanced design—tilts and rides on runners on back haul. Easily replaceable, reinforced digging corners. For the complete story, send for bulletin.

The Pacific "Slushmaster" scraper is available in the following models and sizes:

MODEL	SIZE	WEIGHT
2A	26"	398 lbs.
2A	30"	424 lbs.
2A	34"	452 lbs.
AB	36"	622 lbs.
AB	42"	664 lbs.
2B	36"	1176 lbs.
2B	42"	1314 lbs.
2B	48"	1400 lbs.
2C	60"	2191 lbs.

Other Pacific Mining Products:

PACIFIC JAW CRUSHERS, Sizes: (6" x 12" to 15" x 38")
MANGANESE STEEL CRUSHER JAWS
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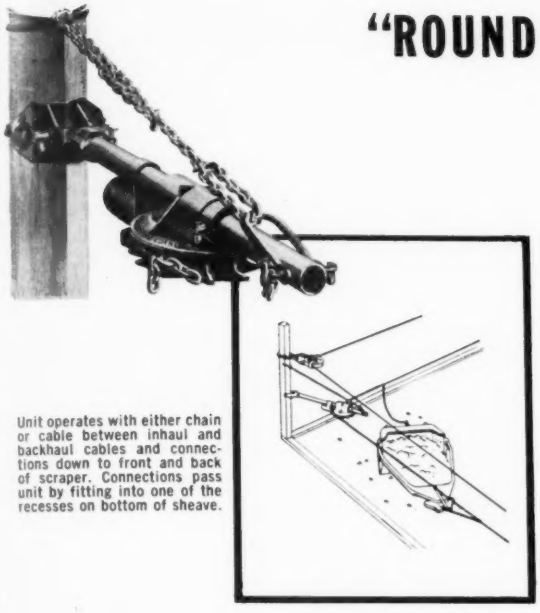
"ROUND THE CORNER" SHEAVE BLOCK



Unit operates with either chain or cable between inhaul and backhaul cables and connections down to front and back of scraper. Connections pass unit by fitting into one of the recesses on bottom of sheave.

NEWEST THING IN MINING – Now you can slush around corners *in one setup!* Pays for itself in a short time. With this amazing new Pacific "Round the Corner" Sheave Block, you can go around one, two or more corners with a single scraper. Thoroughly field tested. Light–Portable –Easily installed in timbered or hard rock mining operations.

Unit illustrated is made for operating with scraper hoists up to and including 20 H.P. For satisfactory operation it is necessary to use "Slushmaster" or Pacific Drag Scraper.

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Simple–Rugged–Durable. Models C and CF, half shroud and full shroud (illustrated) made in 8", 10" and 12" sizes. Manganese steel wheels and side frames. Roller Bearings. Available with hook, shackle and safety swivel shackle. Pacific manufactures a complete line of Sheave Blocks including 16" tail block assemblies, 8" wide-throat guide sheave blocks and others. Send for bulletin.

Model CF with Hook

Model C with Safety Swivel Shackle

Model CF with Shackle

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Provide a firm, dependable anchor for fastening sheave blocks, vent pipes, etc. in rock walls. Made of tough, alloy steel castings, heat treated to assure maximum strength. Available in four popular sizes. Send for bulletin.

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AFRICA

ALGERIA

Area ..... 847,818 square miles
Population 7,900,000
Currency Unit ..... Algerian Franc
Value $0.0022
Chief Mineral Products: Iron, lead, zinc, phosphate, antimony.

The year 1950 marked an appreciable progress in the production of minerals in Algeria. Despite increasing competition from high grade American and Moroccan phosphate, the production of Algerian phosphate of low and medium grades stays stationary (675,000 tons in 1950) a slightly higher output over the prewar tonnage (584,000 tons in 1938). The principal operator, the Compagnie des Phosphates de Constantine, has mechanized loading facilities and underground transportation and has also mechanized the equipment in its decarbonizing plant.

The iron ore production in 1950, 2,530,000 tons, is equivalent to that in 1949 but is much bigger than in 1948, (1,871,000 tons), without however equalling the extraction rate before the war of 3,060,000 tons in 1938. The Ouenza deposits furnished a most important tonnage, 1,860,000 tons. The current modernization of the equipment of this company will allow attainment of a yearly production of 2,500,000 tons. New installations are being considered at Bone and the company expects to be able to load ships at a rate of 1,000 tons an hour.

The lead and zinc mines are handicapped on one hand by the lack of reserves, and on the other hand by old equipment, the replacement of which could not be effected during the war and which is still subject to results of research in progress. Among the mining companies which have improved their installations and which will account for production in 1951 are the lead mines and, principally, the zinc mines of Ouarsenis, and the lead mines of Mesloula and of Djebel Ichmoul. The production of lead for 1950, 2,500 tons, is expected to reach 4,000 to 5,000 tons in 1951, this tonnage still being below the prewar output of 8,800 tons in 1938. The production of zinc (nearly all calamine) was 15,800 tons in 1950 against 9,900 tons in 1938.

The only antimony producer, the Societe des Mines d'Ain Kerma, has developed three satisfactory deposits. In 1950 the company experienced a slight reduction of output—4,300 tons against 4,700 tons in 1949—but progress is remarkable in comparison to prewar output of 1,920 tons in 1938.

FRENCH MOROCCO

Area ..... 200,000 square miles
Population 8,000,000
Currency Unit ..... Franc
Value $0.025
Chief Mineral Products: Lead, zinc, manganese, phosphate, cobalt.

The production at the two phosphate centers, Khouribga and Louis-Gentil reached nearly 4,000,000 tons in 1950 (3,872,000) against 1,500,000 in 1938, representing in value 60 percent of the total mineral production of Morocco. This result has been attained through extensive transformation in the method of mining, and of drying, i.e., the creation of new mining levels; centralized screening installations; and modification of interior lining and of combustion chambers of the drying furnaces. The investments for the modernization of equipment and the construction of housing for the personnel amounted to nearly 6,000,000,000 francs. Modernization payment has been assessed annually since 1948 and will continue until 1952.

Lead mining is increasing yearly in importance in Morocco. The top production achieved before the war (35,400 tons in 1939) was first exceeded in 1948—39,200 tons—and reached 51,000 tons in 1949 and 65,000 tons in 1950; the planned production in 1951 is 80,000 tons.

Of 20 mines, four—Bou Beker, Touissit, Aouli and Mibladen—furnish 85 percent of the total ore extracted.

Until 1948 all the lead ore and concentrate were exported. The importance of known reserves in "oriental" Morocco (about 1,000,000 tons of contained lead) has justified the building of the Oued-el-Heimer smelter. Equipped with Newman hearths, this plant produced 7,000 tons of lead bullion in 1949 and 12,500 tons in 1950. A desilvering plant should allow an annual production of 20,000 tons of metallic lead.

Zinc mining, which up to 1949 produced only about 5,000 tons a year, is being expanded in the same way as lead. Already, in 1950, it surpassed 20,000 tons and will rapidly reach 80,000 tons. Zinc ore recently has been found in association with galena, in extensive lead deposits developed in "oriental" Morocco. Positive and probable reserves of lead ore are estimated to contain about 1,000,000 tons of zinc.

The three principal manganese deposits are those of Bou Arfa in oriental Morocco, and of Imini and of Tiouine, south of the Atlas Mountains. The ore is in lump form at Tiouine, is less compact and partly pulverized at Bou Arfa, and is totally pulverized at Imini; the manganese content is extremely variable—from 30 percent at Bou Arfa to 50 percent at Imini. Some concentrations of pyrolusite, rich in manganese dioxide are carefully sorted for chemical use.

The metallurgical ore serves for the spiegeleisen. The pulverized ore must first be agglomerated. That of Imini is agglomerated by sintering in the Sidi Marouf plant near Casablanca. The Bou Arfa production is shipped by rail more than 300 km. to Oujda and Algerian seaport of Nemours. Ore f the deposits south of the Atlas Mo tains must be transported to Marrak crossing the Atlas at 2,250 meters altit An aerial tramway, 28 kilometers l is being constructed and should elimi the most difficult part of the transpo ation, the expenses for which repres nearly two thirds of the export sell price.

Only 60,000 tons of manganese ore produced in Morocco in 1938. To sup the steel making needs of France, min and production have increased from 21 000 tons in 1948 to 233,000 tons in 19 and to 285,000 tons in 1950.

The Ait Amar iron deposit produce 266,000 tons in 1938. Its operation, inter rupted during the war, resumed in 194 the annual output of 350,000 tons, attained in 1949 and 1950, is exported mainly to England.

About ten antimony mines, located in central Morocco, in the interior of the perimeter, Oued Zam, Oulmes, Azrou, Khenifra, had a production of 1,200 tons in 1949 and 1950 compared to 270 tons in 1938. Their future is dependent on their reserves, the purity of the ore and the possibility of beneficiating their ore.

South of Ouarzazate, the ore-bearing region of Bou Azzer produces cobalt ore of which production, 6,500 tons in 1938, fell to 1,750 tons in 1949, and increased again in 1950 to 3,500 tons.

S. W. AFRICA

Area ..... 322,393 square miles
Population 325,000
Currency Unit ..... Pound S. A.
Value $2.80
Chief Mineral Products: Copper, tungsten, lead, zinc, vanadium, lepidolite.

The inflated price of tungsten of £1,850 per ton as 1951 started distracted attention from beryl winning to some extent. Over the last 18 years there have been three tungsten rushes that have left little in the surface deposits. However, the tungsten reserves of the territory like those of South Africa are by no means exhausted.

The volatile nature of the tungsten trend was said to be a consideration in the closing down of operations in its Nababeep mine by the O'okiep Copper Company, a large scale producer. It is felt that if China resumes its trade with the West, prices may slump sharply.

Mineral Production in South West Africa in Short Tons in 1949 and 1950

Commodity	1950	1949
Beryllium	415	188
Bismuth	13	...
Cadmium[1]	527	649
Copper[1]	8,906	7,844
Corundum	8	...
Fluorspar	50	...
Graphite (crude)	1,139	1,946
Lead (concentrates)	64,105	65,132
Lithium (amblygonite)	190	130
Lithium (lepidolite)	6,168	245
Lithium (petalite)	80	34
Tantalite-Columbite	8	1
Tin concentrates	155	186
Tungsten (scheelite)	2	4
Vanadium (V_2O_5 in lead & zinc concentrates)	447	216
Zinc (concentrates)	17,677	19,787

[1]In lead and zinc concentrates

BELGIAN CONGO

Area ..... 941,809 square miles
Population 11,046,000
Currency Unit ..... Belge Franc
Value $0.017
Chief Mineral Products: Copper, uranium, diamonds, tin, zinc, cobalt, gold.

An increase of the capacity of the hydroelectric power plants of the Union Miniére du Haut Katanga enabled this company to raise its copper production to 176,000 metric tons as compared with 141,000 in 1949. This is a new record for copper output.

The by-products of this industry have shown a parallel increase: the output of zinc concentrate reached about 145,000 tons compared to 109,000 tons in 1949, and the production of cobalt attained 4,900 tons.

The production of fine gold is stationary and remains a little over 10,000 kg.

The tin mines have extended their activity and the production of cassiterite has raised from 16,000 tons in 1949 to about 18,000 tons for 1950. The developments announced last year at the Geomines have been pursued and its subsidiary the Georuanda, in the Ruanda Territory, has also improved its installations.

The production of wolframite attained 180 tons in addition to about 450 tons of mixed cassiterite-wolframite ore. The tantalo-columbite and mixed tantalo-columbite-cassiterite ores maintained their level of around 120 tons and 900 tons respectively.

As forecasted, the output of industrial diamonds has reached a new peak of approximately 10,300,000 carats, an increase of 1,200,000 carats over the preceding year. The production of jewelry stones has been maintained at about 550,000 carats.

Attention is now being given to the development of manganese deposits. The production for 1950 was only about 9900 tons of ore but the opening of the B.C.K. manganese mines will soon increase this figure considerably.

Mechanization of the mining industry is progressing steadily, mostly at the Symétain tin mines and at the Miniére du B.C.K.

FRENCH EQUATORIAL AFRICA

Area ..... 912,049 square miles
Population 3,600,000
Currency Unit ..... Franc
Value $0.025
Chief Mineral Products: Diamonds, gold.

Gold and diamonds are the principal minerals found in this country. Alluvial deposits furnish nearly all the total production of gold. Gabon produces nearly one half and Middle Congo nearly one quarter of the metal extracted in the Federation; the rest comes from Oubangue-chari. The normal method of placering is sluicing. Semi-mechanization has been introduced by several companies; it reduces labor, which is more and more difficult to find. This scarcity of manpower has been the cause of reduction of output which fell from 2,900 kilos in 1941 and 1942 to 2,000 kg in 1950.

Diamond placering of alluvial deposits is carried on also. No primary deposit has yet been found. Nearly one half of the diamonds are classed as gem stones; the other one half being industrials, boarts and carbones. In 1950, 110,000 carats were recovered.

At M'Fouati, south of the Brazzaville-Pointe Noire railway, the Cie. Miniere du Congo Francais is working a deposit of lead and zinc ore. In 1950 it extracted 2,800 tons of lead ore (52 percent) and 1,600 tons of zinc ore (40 percent). In the same region (Mindouli) exploitation of copper ore has produced 15,000 tons from 1925 to 1935. Research is actively pursued in order to find extensions of depleted deposits.

Several tons of tantalite-colombite, coming from Mayoko in the district of Mossendjo have been exported yearly since 1945; in 1950, 1.6 tons.

NORTHERN RHODESIA

Area ..... 290,320 square miles
Population 1,645,000
Currency Unit ..... R. Pound
Value $2.00
Chief Mineral Products: Copper, zinc, lead, vanadium.

1950 proved to be a year of records for Northern Rhodesia both in production and value of output. The total mineral output was worth £46,000,000, exceeding the 1949 total by £10,000,000.

The output of electrolytic copper at 75,000 tons exceeds the previous year's record by over 10,000 tons. The combined electrolytic and blister copper production at 265,000 tons was a record.

The very marked increase in electrolytic copper output, which in the last four months of the year rose to a rate of over 90,000 tons per annum, is due to Rhokana Corporation, Ltd. producing its entire output in the form of electrolytic copper. Cobalt production was also much higher, reaching 1,650 tons.

The discovery, during the year, of coal near Kafue is of great interest. Should there prove to be a coal area of economic importance here, it would be of the highest value to the copper belt. Cost of production of copper would be reduced as a result of the halving of the distance the coal has to be hauled.

Rhodesian Broken Hill Development Company, Ltd. kept up its last year's increase to maintain the output of lead and zinc at 23,000 tons and 14,000 tons respectively.

TUNISIA

Area ..... **48,300 square miles** **Currency Unit** ..... **Franc**
Population ..... **2,750,000** **Value** **$0.51**
Chief Mineral Products: Phosphate, iron, lead, zinc.

The year 1950 marked a general increase in Tunisian production of the principal minerals except zinc, for which there was a decrease of 13.6 percent, and for iron pyrite, extraction of which ceased during the last six months of the year.

There was an increase in production of phosphate of 5.75 percent compared with 1949—1,525,000 tons against 1,442,000 tons. Tunisia however has not regained its prewar rate of 2,034,000 tons reached in 1938. Production from the principal mine, Gafsa, has increased from 959,400 tons to 1,079,000 tons. Ain Kerma also had a slight increase while M'Dilla and Kalaa Djerda experienced decreases. The exports of 1,571,900 tons in 1950 against 1,792,400 tons in 1949 show a decrease of 12.3 percent. Five countries have shared more than three-quarters of the exports: France, 28.76 percent with 452,200 tons; England, 14.67 percent with 230,700 tons; Italy, 12.28 percent with 193,100 tons; Spain, 11.46 percent with 181,700 tons; and Germany, 10 percent with 157,100 tons.

The sale of 63 percent "metallurgical" phosphate improved while the sale of 58 percent fell from 28.8 percent to 17.3 percent.

The postwar production of iron ore increases continuously from year to year: 758,000 tons in 1950 against 712,000 tons in 1949; however prewar tonnage was 818,000 (1938). The Djerissa mine produced 653,000 tons of the 1950 figure and the Douaria mine produced 81,300 tons.

The 1950 production of 30,660 tons of lead marks an increase of 28.6 percent over 1949's 23,850 tons in spite of a decline in metal prices during the year's first quarter. Production in 1938 was 31,500 tons. Ten mines each had a production in excess of 1,000 tons. The production capacity was especially remarkable for El Grefa (production 5,670 tons, an increase of 1,353 tons) and Ressas Touireuf (production 2,430 tons an increase of 1,400 tons).

Progress was especially marked in the following three smelters which produce lead bullion: Megrine, 20,650 tons against 16,670 tons in 1949 Djebel Hallouf, 1,890 tons against 1,630 tons; and Bizerte, 1,000 tons against 1,210 tons.

The mining of zinc blende dropped from 6,150 tons in 1949 to 5,260 tons in 1950; that of calamine from 500 tons in 1949 to 480 tons in 1950. The sulphide is produced in nearly equal quantities from the following mines: Sakiet Sidi Youssef and Djebel Ressas.

UNION OF SOUTH AFRICA

Area ..... **472,550 square miles** **Currency Unit** ..... **Pound S. A.**
Population ..... **12,112,000** **Value** **$2.80**
Chief Mineral Products: Gold, manganese, chrome, copper, diamonds, platinum, chrysotile asbestos.

The Union's mining industry continued to make rapid advances during 1950. This was the first full year after devaluation, which, coupled with a deteriorating international situation, resulted in a continued boom in base metals.

The gold mining industry reduced its grade slightly to 3.759 dwt. per ton and increased its milled tonnage by about 2,500,000 tons to 59,515,200 tons. The gold output of 11,659,280 ounces was slightly lower than 1949. Working costs, however, rose sharply by 13 percent during the year. The total native labor force employed dropped steadily during 1950 from almost 300,000 to only 271,231 in December. This was also the first year of substantial benefit to the mines from the sale of industrial gold at a premium price. The revenue from this source amounted to about 1.5 percent of the total revenue derived from gold mining.

Platinum output, which began the year on a normal level, experienced a sudden spurt towards the end of the year, reaching the record of 11,201 ounces for November and a total of 105,750 ounces for the year, an increase of 10 percent. Early in the year Rustenburg Platinum Mines rebuilt its smelting furnace to handle the output from both sections of the property and the treatment of accumulated stocks. This probably accounts for the increased output.

During the year manganese sales again rose, though not to double themselves as in 1949. The output of 831,145 tons represents an increase of 37,000 tons. The increase could possibly be ascribed to the assistance from the South African Railways & Harbors in handling of the ore, as truck shortages and port congestion contribute largely to limiting sales. During the latter half of the year a new manganese field was discovered in South West Africa reportedly having vast reserves of a satisfactory grade of ore.

The chrome industry expanded its output considerably during 1950, the output rising from 355,475 tons in 1949 to 536,215 tons in 1950. As with manganese, the major bottleneck is the Railway's inability to handle the traffic offered. During 1950 Palmiet Chrome Mines was forced to suspend operations due to difficulties arising from the highly faulted nature of its ground.

Asbestos mining continued to expand during the year, the total production of all types being 76,170 tons compared with 68,903 tons for 1949. The output of chrysotile and blue asbestos rose by 25 and 20 percent respectively, but the production of amosite declined slightly to 40,000 tons, as opposed to 41,000 tons in 1949.

An announcement of major importance was the agreement between the United States, England and South Africa on conditions of sale of uraniferous materials. Closely following this was the announcement that uranium would be extracted from the Witwatersrand gold ores—on an economic basis—from at least four mines, West Rand Consolidated Mines Ltd., Blyvooruitzicht Gold Mining Co., Ltd., Western Reefs Exploration and Development Co., Ltd., and Daggafontein Gold Mining Co., Ltd. Though no information is available it is known that the uranium content is very low but, with the colossal tonnages mined along the reef, the potential uranium production capacity reaches impressive proportions.

Developments during the year in the Orange Free State have been extremely impressive. We have here a thoroughly well planned development and, though the boom-town tradition of saloons and gambling houses is absent, there is a decisive hustle in the air. There were 25 shafts sunk or being sunk along the line of the Free State reef and 13 of them were more than 2,000 feet deep at year's end. At St. Helena Gold Mines, Ltd. the shafts have been connected and seven miles of underground development completed. This mine should be in production early in 1951. Welkom Gold Mining Company is also in an advanced state of development.

South African Mineral Production in Short Tons and Sales Value in £ S.A. in 1950[1]

Commodity	Year 1950 Quantity	Year 1950 £ Value	Year 1949 Quantity	Year 1949 £ Value
Gold[2]	11,663,713	144,775,837	11,705,048	114,864,910
Diamonds[3]	1,925,526	14,388,706	1,494,527	10,035,484
Silver[2]	1,119,135	302,115	1,159,375	237,768
Platinum Metals[4]	105,750	2,108,863	94,092	1,343,589
Osmiridium[4]	6,357	163,943	7,898	138,162
Copper	38,811	5,651,082	36,091	3,680,004
Tin	645	412,574	497	285,663
Antimony	13,512	788,697	7,818	438,879
Beryl	905	77,460	312	25,721
Bismuth ore	16	6,794	12	2,546
Chrome ore	536,215	1,408,350	355,475	1,035,471
Iron ore	1,318,326	656,433	1,366,698	603,365
Lead ore	776	42,528	139	5,114
Manganese ore	831,145	3,292,493	793,971	2,409,108
Nickel	644	187,734	681	136,023
Tungsten ore	236	62,034	310	83,027
Andalusite	8,330	9,415	4,623	5,329
Asbestos	76,170	3,623,589	68,903	2,763,964
Barite	2,500	8,477	2,449	7,562
Corundum	3,529	73,602	2,717	49,733
Fluorspar	6,980	22,314	5,629	19,406
Graphite	218	1,619	191	1,087
Iron pyrite	39,712	69,614	39,162	59,214
Kaolin	7,163	18,996	4,675	11,409
Magnesite	12,767	28,137	11,439	23,233
Mica	1,486	10,239	796	4,116
Talc	4,551	12,352	5,579	13,151
Vermiculite	31,497	171,533	13,258	63,272

[1]Records of the Government Mining Engineer
[2]Fine ounces
[3]Metric carats
[4]Ounces

The diamond industry showed a marked upsurge during 1950 and produced almost 2,000,000 metric carats, 25 percent being industrial. The value of its products rose 40 percent over the 1949 level. The completion of the world's largest HMS cone plant at Premier Diamond Mining Co., Ltd.'s mine early in the year is certainly responsible for most of the increase in production, particularly of industrials, while devaluation of sterling would account for the balance of the increase in value.

FRENCH WEST AFRICA

Area .....1,814,810 square miles
Population 16,500,000
Currency Unit .....Franc
Value $0.025

Chief Mineral Products: Diamonds, gold, iron, bauxite.

Nine tenths of the gold recovered in French West Africa is from alluvial deposits in the Siguiri (Haut Niger) basin. Placering, which is reserved for natives, was halted in 1942 because of supply difficulties. Reopened in 1946, these "reserves" produce from 1,000 to 2,000 kilos of gold annually. "European" production exceeds 100 kilos by a small margin—115 kilograms in 1950.

The Societe Guineenne de Recherches et d'Exploitations Minieres placers the diamond-bearing alluvial sands in Haute-Guinee, located halfway between Beyla and Kissidougou. Production shows a marked increase from 95,000 carats in 1949 to 128,000 carats in 1950.

Development of iron-bearing laterite deposits near the Kaloum peninsula continued in 1950. This deposit contains 2,500,000,000 tons of positive reserves, containing an average of 47 to 48 percent iron, of which 1,000,000,000 tons is 51 percent grade. There are, in addition, 1,200,000,000 tons evaluated at 44 percent. The Societe Miniere de Conakry will begin production as soon as mining equipment shipped from the seaport reaches the mine.

Near Conakry, the Society des Bauxites du Midi is developing the bauxite deposits of the Los islands which may contain about 5,000,000 tons.

Phosphate-containing laterites in the neighborhood of Thies (Senegal) with 25 to 30 percent of P_2O_5 and of Al_2O_3 are the object of research for fertilizer uses by the Cie. Pechiney. Several thousands of tons were mined and exported during 1950.

Ilmenite, recovered from the ilmenite-bearing coastal sands of Senegal, is exported after sifting which produces a mixed concentrate assaying 75 percent ilmenite. However, after electromagnetic treatment which produces an ilmenite concentrate containing about 57 percent TiO_2, a nonmagnetic residue rich in zircon is left. Treated on shaking tables, this residue furnishes saleable zircon. The year 1950 showed a decrease in production to 1,000 tons from 8,000 tons in 1949.

Alluvial and eluvial deposits of cassiterite have been discovered in the mountains of Tarraoudji, Elmeki and Guissat (Air). A study of them has been made by the Societe Miniere du Dahomey-Niger which mined 90 tons of ore in 1950. The great dryness of the climate does not permit the usual sluicing method and it is necessary to use a dry-concentration method.

KENYA

Area .....224,960 square miles
Population 5,454,000
Currency Unit .....Pound
Value $2.80

Chief Mineral Products: Gold, kyanite, soda ash.

The most important mineral production in Kenya in 1950 was that of the Magadi Soda Company, the output of soda ash and salt being valued at over £855,000.

Only bullion figures are available for gold but these indicate that 1950 production was approximately the same as that of 1949 and 1948. The 1950 figure is likely to be a little more than £200,000. Of this total, more than half was produced by the Rosterman Gold Mine which has encouraging values and widths down to the 23rd level. The next largest producer was the Kenya Consolidated Goldfields property at Kitere, a group of mines with a central mill which averaged 500 ounces of bullion per month. At the Ngiga Mine's Kahancha property, the old mill is being replaced by a more modern plant brought from the Ngiga Mine. Production has remained slightly above 100 ounces per month on the average. Two small workers which did well are the Kerebe Mines Ltd., established before World War II, and Mr. C. F. Ferguson, who is running a comparatively new mine near Kibigori. Mention must be made of Mr. A. H. Erasmus who took 250 ounces per month for three months from a rich pocket. During the year the Macalder Mine was taken over by Nyanza-Macalder Mines Ltd., a subsidiary of the Colonial Development Corporation, and a program of drilling and exploration was commenced. Kerebe Mines Ltd. purchased the mill belonging to Rhamba Mines, when the latter sold its assets, and is now using it to treat its own ore.

Twenty gold producers were in operation during the year, but of these only 10 had regular output. At the end of 1950, there were over 1,300 claims in existence, in addition to seven mining leases and three exclusive prospecting licenses for gold.

Mineral Production of Kenya in Long Tons in 1950[1]

Commodity	Production
Gold bullion[2]	31,314
Asbestos	224
Corundum[3]	1,546
Diatomite	3,570
Kyanite	11,469
Mica	5
Soda ash	95,570
Salt	16,855
Soapstone	318
Vermiculite	3
Lime	8,961

[1]Preliminary figures
[2]Ounces
[3]Pounds

UGANDA

Area .....94,204 square miles
Population 4,100,000

Chief Mineral Products: Tin, tungsten, columbite, amblygonite, gold

Mining operations in Uganda are not far advanced. Operators are still handicapped by capital shortages and limited individual prospects. A tin deposit has been located in North Kinkizi County, in the Ankole district, near Kanungu. A bismuth deposit in the Luhiza area of the Kigezi district has been disclosed. A new wolframite mine at Maserere, southwest Kigezi district, has been established and is in production. No new milling plants were erected and no extensions to existing plants were effected during the year.

Mineral production in 1949 and 1950 is shown in the accompanying graph.

Mineral Production in Uganda in Long Tons During 1949 and 1950

Commodity	1949	1950
Tin	179.0	263.0
Wolframite	150.0	199.0
Beryl	33.0	43.0
Columbite	2.5	5.1
Bismuth	9.5	6.6
Galena	48.0	53.0
Mica	3,800.0	....
Amblygonite	260.0	265.0
Gold[1]	871.0	586.0

[1]Troy ounces

MADAGASCAR

Area .....228,707 square miles
Population 4,000,000

Chief Mineral Products: Graphite, phlogopite mica, piezoelectric quartz.

As in preceding years, the mining industry concentrated in 1950 on graphite and phlogopite mica.

Producers of graphite have made a remarkable progress in equipping their mines and processing plants. In 1950 there were 13,000 tons of graphite mined against 9,140 tons in the preceding year; and 14,500 tons in 1938.

Mica production is concentrated in two areas: Betroka-Bekily and Fort-Dauphin. When improvements to equipment have been completed (mechanical excavators, pumps, ventilation, and lighting) Madagascar expects to double its production. A large part of this, mainly splittings and irregular thicknesses, could be absorbed by the United States which has developed a procedure for fabricating micanite.

Gold mining, the output of which in 1909 had reached 3,700 kilos and alternated between 350 and 500 kilos from 1918 to 1941, was only 52 kilos in 1949 and 60 kilos in 1950. Among the intervening factors in this low production are primarily the exhaustion of the richest alluvial ground and the lack of manpower.

The abrasive garnet industry is developing rapidly—450 tons in 1949 and 500 tons in 1950— as is the beryl industry, which produced 27 tons in 1949 and 300 tons in 1950.

S. RHODESIA

Area ..... 150,354 square miles
Population 2,022,000
Currency Unit ..... R. Pound
Value $2.00
Chief Mineral Products: Gold, chrome, asbestos, mica, vermiculite.

The value of Southern Rhodesian mining output for 1950 amounts to some £13,500,000. The gold mining industry suffered badly during the year and the output of only about 510,000 ounces will be one of the lowest for many years, although, due to devaluation, the revenue obtained is one of the highest. The reason for the decline in gold is not far to seek as industries are competing very strongly for the very scarce labor. Developments during the year, however, make it probable that output will not decline further. There are improved prospects at The Cam & Motor Gold Mining Company (1919), Ltd. and the Wanderer Consolidated Gold Mines, Ltd. mines. Motapa Gold Mining Company Ltd. also has now emerged from its metallurgical difficulties and should help to boost output next year.

The base mineral production valued at £7,000,000 was again chiefly responsible for the soaring revenue from mining. The value of asbestos output reached new peaks, though the output, at 71,527 tons, was slightly below last year's level.

The demand for Rhodesian chrome has been maintained and increased interest was evident in the latter part of the year. The production is up again at 321,353 tons but the major bottleneck of inadequate transport remains. According to estimates there are half a million tons of chrome ore lying in stockpiles throughout the country awaiting railroad transportation to the export port of Beira.

Rhodesian mica production is still in the doldrums being even lower than 1949 at 85 tons. Beryl output was 932 tons. The coal output shows a big increase at 2,345,841 tons, which is an increase of almost 400,000 tons. There is every reason to expect this improvement will be maintained.

CAMEROONS

The Cameroons produce gold, tin, and rutile. The first gold exploitation took place in 1934. After having attained a maximum output of 717 kilos in 1942, auriferous production decreased to 200 kilos in 1950 because of the lack of manpower and of well-planned mechanization.

Rutile from alluvial deposits is extracted by jigs. This method necessitates a large working force, difficult to find, which offsets the low cost of mining. Production has dropped; it was only 30 tons in 1950 against its maximum yearly output of 3,300 tons in 1944.

A new company, the Societe des Etains du Cameroun, has resumed tin (cassiterite) production in the Mayo Darle region; the known alluvial stanniferous deposits slowly are becoming exhausted and exploration is being conducted. About 100 tons of concentrate containing 71 percent Sn was extracted in 1950 against a yearly average of more than 300 tons from 1935 to 1943.

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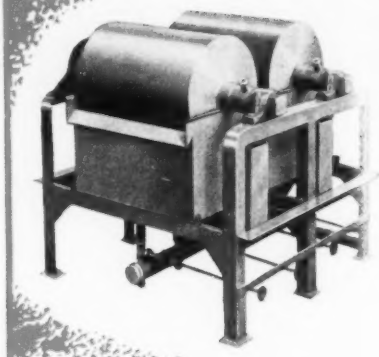

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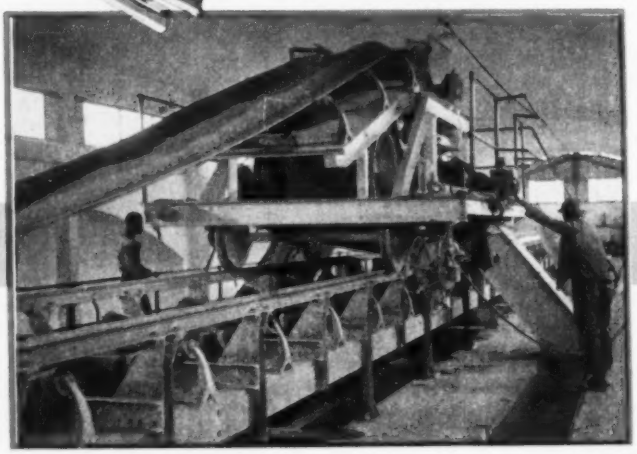

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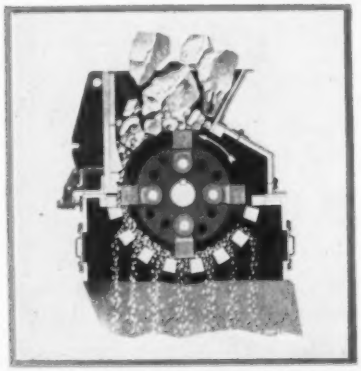

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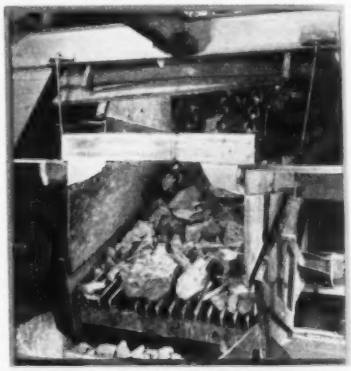

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ASIA

MALAYA

Area ..... **7,800 square miles**
Population **2,350,000**
Currency Unit ..... **Pound**
Value **$2.80**
Chief Mineral Products: Tin, gold, iron.

The tin mining industry of Malaya enjoyed a year of great prosperity during 1950. The price of tin reached an all time high of $642.00 a picul. Production of tin-in-ore reached a total of 57,540 long tons, the highest since 1941. New dredges were placed in operation during the year, but the total remained fairly stationary as others were closed temporarily for repairs and replacement of worn-out machinery. Certain key repair parts were still difficult to obtain. Shortages of electric power curtailed production from some Chinese-owned openpit mines. Practically no prospecting for new deposits was carried on during 1950. In fact, prospecting for the last 12 years has failed to develop reserves as fast as they are mined. Prospecting was handicapped by bandits and guerrillas who harassed field parties, by the increasing labor costs, by the greater depth necessary for prospecting, and the fact that some Malayan states are not desirous of permitting mining in certain areas.

In September there were in operation 74 dredges, 21 European and 515 Chinese gravel-pump mines, 12 European and six Chinese hydraulic mines, one European and five Chinese opencast mines, one European and 24 Chinese underground mines, one small European mine and 43 small Chinese mines.

Malayan Production of Tin-in-Concentrates in Long Tons for 1936 Through 1950

Year	Long Tons
1936	66,769
1937	77,266
1938	43,375
1939	47,416
1940	83,000*
1941	79,400*
1942	15,748
1943	26,000
1944	9,309
1945	3,152
1946	8,432
1947	27,026
1948	44,815
1949	54,910
1950	57,540

*Estimated

TURKEY

Area ..... **296,190 square miles**
Population **19,623,000**
Currency Unit ..... **Pounds Turkish**
Value **$0.3571**
Chief Mineral Products: Chrome, copper, manganese, iron, emery, lead, zinc.

The big event in Turkey's mining in 1950 was the completion of the 1,500-ton-per-day copper flotation mill and smelter at the Murgul copper mine. Operations were started in late 1950. Although Murgul is planning to produce 10,000 tons of blister copper per year, production in 1951 is expected to be around 6,000 tons.

The 300-ton-per-day copper flotation mill at the Ergani copper mine and smelter (where copper ore is directly smelted in the blast furnace) started operation in the spring of 1950 and treats 150 tons each of current mine output and stockpiled fines per day.

The difficulties in floating accumulated and partly oxidized fines, of smelting of the concentrate in the blast furnace and of training the crew are being solved. Using a recently installed, additional converter, 1951 production will be increased by about 2,500 tons. Output will be above 14,000 tons of blister copper per year.

The chromite concentrator at the Guleman mine also started operation in the middle of 1950 and produced 6,000 to 7,000 tons of concentrate. The concentrate production goal for 1951 is about 30,000 tons.

Production of Turkish Minerals in 1950

Commodity	Metric Tons
Bituminous coal	4,292,000
Lignite	1,187,000
Iron ore	253,000
Chromite	400,000
Copper (blister)	11,700
Antimony	2,158
Lead-Zinc ore	132
Manganese	22,664
Magnesite	540
Sulfur	5,800
Asbestos	384
Boracite	9,942
Emery	1,705

JAPAN

Area ..... **147,690 square miles**
Population **83,840,000**
Currency Unit ..... **Yen**
Value **$0.002778**
Chief Mineral Products: Copper, pyrite, gold, lead, zinc, silver.

Mine and metal production in Japan continued to increase during 1950. Several post-war production records were established. The greatest need of the mining industry is for new and modern equipment to mechanize operations and increase output.

An important gold discovery was made in the summer of 1950 by the Taihei Mining Company, Ltd. in the Kitami district, Hokkaido. A new mine, the Shimararagai, is under development and all development ore is shipped to the company's copper smelter.

1949 and 1950 Production of Ore in Japan

Ore	1949	1950
Antimony[1]	162,000	159,983
Arsenic[1]	2,772,000	1,742,076
Copper[2]	32,519	39,467
Gold[1]	2,629	4,085
Lead[2]	8,981	10,823
Mercury[1]	94,750	47,978
Silver[1]	84,356	114,388
Tin[2]	194	335
Zinc[2]	44,182	51,904
Pyrite[2]	1,532,700	1,910,773

[1]In kilograms
[2]In tons

INDIA

Area ..... **1,578,267 square miles**
Population **346,000,000**
Currency Unit ..... **Rupee**
Value **$0.21**
Chief Mineral Products: Manganese, iron, gold, mica, ilmenite, monazite.

The total annual production of minerals in India is valued at an estimated 600,000,000 rupees, a figure which could be considerably larger if India's ore dressing techniques were more up-to-date. Through several newly created organizations, the government is, however, now spending much time and money on research in those techniques, and production, which was greater in 1950 than in 1949, should grow yearly.

During the year, a new company, the Hyderabad Gold Mines Company, Ltd. installed a 150-ton pilot plant at the gold mines at Hatti in Hyderabad. The Metal Corporation of India, Ltd., received a 3,000,000 rupee loan to develop its Zawar lead-zinc mines and to improve its smelter in Mewar State. Production was up to 400 tons of zinc and 200 tons of lead concentrates monthly by September. The India Copper Corporation treated 99,994 tons of copper in the fourth quarter, recovering 1,825 tons of refined copper. Although annual statistics are not all available, India produced in 1950 727 tons of lead, 3,596 tons of aluminum, about 700,000 tons of manganese, 169,723 ounces of gold, 6,614 tons of copper, and 386 tons of antimony.

Production of mica, magnesite, chromite, ilmenite, zircon, monazite, kyanite continued, with a major part exported, unprocessed, for treatment abroad.

THAILAND (SIAM)

Rehabilitation of tin mines in Siam was practically finished by the end of 1950. The only mines which have not been able to produce since the end of the war were the Pinyok mine and the Talerng mine. Thailand Tin Mines Ltd. found financial and technical difficulties in finishing the Cavaet plant at the Pinyok mine; and Tongkah Harbour Tin Dredging Ltd. had to cope with hard dredging ground and a fuel problem at Talerng.

With more demand for tungsten, more wolframite mining activities have been reported at Kanburi and Ma Sarieng since the outbreak of war in Korea.

Productions of minerals for 1950 was: tin, 10,364 tons (metallic tin content); wolframite, 1,127 tons (concentrate); antimony, 170 tons (concentrate); lead, 1,334 tons (concentrate).

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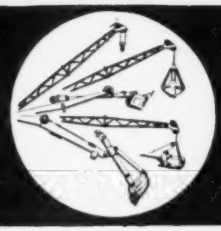

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OCEANIA

AUSTRALIA

Area . . . 2,974,581 square miles
Population . . . 8,186,000
Currency Unit . . . £ Australian
Value . . . $2.24
Chief Mineral Products: Lead, zinc, gold, iron, tin, tungsten.

The position of the metal industries in Australia is clouded by the fact that continuous coal shortages have seriously reduced production in all spheres.

The production of steel is about 70 percent of capacity due to coal shortages and this is well below demand.

Output of lead in Australia increased by about 15 percent in 1950 while zinc, scheelite, cadmium and rutile all continue to be exported. Production of copper increased by about 30 percent but is still far from meeting local demand.

Prior to 1941 Australia exported tin but has at present a small deficit. Construction of a tin plate mill at Port Kembla, New South Wales, which is well advanced will double Australia's tin requirements necessitating the importation of some 3,000 tons of tin per year.

While the base metal industry generally is in a very strong position, despite local price control for home consumption, the gold mining industry is being adversely affected by inflation and the ever present fear of revaluation of the Australian pound. Shortage of labor and essential supplies are additional burdens to the industry. At the close of 1950 it appeared most unlikely that the Australian gold mining industry would regain its prewar level, which was about double the present output.

QUEENSLAND

Mount Isa Mines, Ltd., was unable to reap the maximum benefit from prevailing world zinc prices due to curtailment of shipping. Work on the new copper milling and smelting plant progressed during 1950 and it is anticipated that it will be in production in approximately 12 months.

Production of Mount Isa for the First Nine Months of 1950

	First Nine Months of 1950	First Nine Months of 1949
Tons ore treated	462,168	378,272
Tons silver-lead bullion	27,850	23,581
Tons zinc concentrate	37,889	29,688

Production of Mount Morgan Ltd., covering the first 40 weeks of 1950 was: tons ore treated, 602,650; ounces gold recovered, 59,868; tons copper, 3,628. This represents a marked increase over last year.

SOUTH AUSTRALIA

At Radium Hill exploratory drilling has extended the known limits of radioactive ore bodies. Samples of Mt. Painter uranium ore were sent to the United States for investigation of possibilities of concentration.

Zinc Corporation Ltd. undertook examination of the pyrite deposits at Nairne near Adelaide. Several drill holes have been put down and the report of the South Australian director of mines (Mr. Dickinson) recommends development of this deposit, as the major source of sulphur in South Australia.

Research work on the application of the "El Paso" process to Broken Hill Associated Smelter's lead refining has been established on a pilot plant scale. Development of vacuum dezincing is proceeding.

VICTORIA

Gold yield for the first 11 months of 1950 amount to 34,057 ounce which is a decrease of 23 percent for the corresponding period of 1949.

Production from the Bendigo field was approximately two-thirds of the State's total and amounted to 21,000 ounces, only slightly less than 1949.

Great interest was aroused by the discovery of several large nuggets in the town of Wedderburn near Bendigo. Despite intensive prospecting no major finds were made. Largest nugget found weighed 168 ounces, being 12 inches long, and 3 inches thick.

WESTERN AUSTRALIA

Production of gold for the year was 606,172 fine ounces compared with 644,252 fine ounces in 1949. However, due to the devaluation of the Australian pound the value of the gold production for 1950 was £A9,466,270 compared with £A7,962,808 in 1949.

Expansion of activities of Great Western Consolidated N.L. was reflected in the development and construction of a mine and plant to treat 400,000 long tons per annum of copper-lead ore.

Intensive prospecting was carried out south of Kalgoorlie to search for possible repetition of the Kalgoorlie field. Several prominent companies are interested. Unfortunately, talk of revaluing the Australian pound in terms of Sterling has unsettled the gold mining industry, costs continue to rise and the scarcity of new plants and equipment has hampered expansion of the gold mining industry.

NEW SOUTH WALES

Gold production was 36,950 ounces for the first 10 months of the year, about 14 percent less than the corresponding period in 1949.

The development of substantial tonnages of sulphide and slightly oxidized ores was reported from Broken Hills South, Limited. The discovery of radioactive minerals in mines in the Broken Hill area was reported during the year. Production of the Broken Hill mines was maintained at 17,000 long tons of lead concentrates and 20,000 long tons of zinc concentrates per month. Milling recoveries at Broken Hill North were the highest yet obtained being 97.4 percent of the lead and 97.8 percent of the zinc.

Imperial Smelting Corporation, Ltd., investigated the possibility of establishing a zinc smelter at the Sulphide Corporation Pty. Ltd., plant at Cockle Creek near Newcastle. Extensions to the existing superphosphate and sulphuric acid plants are also contemplated.

Production from the Occidental mine of New Occidental Gold Mine N.L. at Cobar showed a slight decrease. Ore reserves have been estimated at 178,000 long tons. For the 12 months ending June 1950, 92,400 tons were milled averaging 7.18 dwts. per ton for a recovery of 30,443 ounces of gold (a recovery of 92 percent). The same Company's Chesney mine milled 51,830 tons, average 1.41 dwts. and 1.72 percent copper producing 4,546 tons of concentrate. This concentrate is railed to the smelters at Port Kembla for smelting. The Company's New Cobar mine was not operated during the year. A deep drilling program was commenced on the Great Cobar copper mine leases.

TASMANIA

Improvement in the supply of coke to the smelter at Mt. Lyell Mining & Railway Co., Ltd., resulted in almost continual operation of the smelter. Production of blister copper was consequently more than double 1949 production. The purchase of additional plant equipment was made and increased output is planned. For the year ended 30th September, 1950, Mt. Lyell reports tonnage treated as 1,517,000 long tons with a recoverable copper content of 7,703 long tons. Increased output was aided by a slight increase in tonnage treated and grade of ore.

Despite interruption to supply of concentrate, caused by railway strikes, Electrolytic Zinc Co. of Australasia Limited topped the previous year's record production of 83,669 tons by a small margin. Production at the company's west coast mines was increased and ore reserves maintained. A large multiple channel electric induction furnace for melting cathode zinc is to go into production in early 1951.

Aberfoyle Tin, N.L. report increased throughput and production of tin and wolframite concentrate.

The old lead-zinc field at Zeehan was the subject of intensive explorations and development. It is expected that production will soon commence.

King Island Scheelite (1947) Ltd. continued to produce large tonnages of high grade scheelite concentrate in 1950.

NORTHERN TERRITORY

Discoveries of radioactive deposits continued throughout the year. Enough significance is attached to some of these deposits to warrant further exploration by the Commonwealth Bureau of Mineral Resources and prospectors are active throughout the territory.

Peko (Tennant Creek) Gold Mines N.L. commenced diamond drilling programs. Nobles Nob (Australian Development) N.L. at Tennant Creek continued to extract high-grade ore and prospects are bright. Tennant Creek continues to be the most actively developing gold field in Australia.

Production of high-grade copper ore was maintained at the Home of Bullion mine and was dispatched to the smelter at Port Kembla, New South Wales.

REPUBLIC OF INDONESIA

Area . . . 733,000 square miles
Population . . . 72,000,000
Currency Unit . . . Rupiah

Value . . . $0.263
Chief Mineral Products: Tin, bauxite.

Besides tin and bauxite, the ore production in Indonesia remained unimportant as a consequence of the unsatisfactory political situation. Since the end of the war no new mining rights have been granted for ore deposits and exploration consequently has come to a standstill. Gold production by Western enterprises has ended entirely; only alluvial work is done by natives. The nickel concessions of the Billiton Co. and the East Borneo Co. in the Celebes are inactive, but there are better prospects for the future in consequence of interest from the United States. Research in a pilot plant has been taken up, to try a new process on the refractory nickel ores of these areas. When successful and when it proves possible to come to acceptable terms with the Indonesian Government for the working of these nickel deposits, prospects look considerably brighter.

BANGKA AND BILLITON

Tin production of the "tin islands" during the first nine months of 1950 amounted to 23,857 tons. Monthly average output of 2,682 tons was therefore still below the prewar average of 3,657 tons. All the tin ore is now smelted in the United State's tin smelter in Texas or in Arnhem, Holland. The export of tin ore during the first nine months of 1950 amounted to 33,669 tons. All the small smelting furnaces in Bangka were closed.

RIAU ARCHIPELAGO

Bauxite production of the Netherland Indies Bauxite Exploitation Co. during the first 8 months of 1950 was 370,729 tons. Monthly average in 1950 was 46,341 tons, against 56,511 tons in 1949. The greater part of the production goes to the United States, a smaller part to Japan.

NEW CALEDONIA

Area . . . 8,458 square miles
Population . . . 75,000

Chief Mineral Products: Nickel, chrome, iron.

Chrome ore comes mainly from Tiebaghi and from the Chagrin and Tontouta mines; 80,000 tons was extracted in 1950.

Iron ore (13,000 tons) and manganese (3,000 tons) were mined. Studies are being conducted for the use of New Caledonian iron ore in Australia.

Nickel ore, of which 130,000 tons was mined in 1950, is processed into nickel "plate" (77 to 78 percent Ni) at the site. In 1950, 6,500 tons was removed. The mining of the ore centers in several favorable areas; new mining equipment was purchased with Marshall Plan funds in 1950.

PHILIPPINE ISLANDS

Area . . . 115,600 square miles
Population . . . 19,518,000
Currency Unit . . . Peso

Value . . . $0.50
Chief Mineral Products: Gold, chrome, copper, iron, manganese, copper.

During the year 1950 gold continued to be the dominant metal accounting for some 60 percent of the value of production of the mining industry of the Philippines. Prior to the war in 1940, the Philippine Islands boasted of 54 gold producers yielding in that year production valued at $38,417,213. Thus the Philippines, though small in area, had become an important source of the yellow metal accounting for 2.5 percent of the world output.

By 1950 only nine of these 54 prewar mines had completed their rehabilitation programs and were in actual production. Their combined gold output amounted to 333,991 ounces, which was almost exactly one-third of the country's 1940 all-time high record production. Several mines are rehabilitating their plants and may add to 1951 production.

Under Philippine laws, gold mines are required to sell 25 percent of their production to the Government at the world price of 70.00 pesos (or $35.00) per ounce. They are permitted to sell the balance in the "free market." Thus the year's production of 333,991 ounces for the industry yielded a total of 33,399,100 pesos, equivalent, on the basis of the official two-for-one exchange rate, to $16,669,550.00. This indicates that the mining companies were able to realize an average value of $50.00 per ounce for their gold.

While rehabilitation of prewar mines during 1950 was greatly hampered by stringent financial conditions, mines already in production were able to expand substanially their operations. Noteworthy in this respect was the doubling of Lepanto Consolidated Mining Company's plant capacity in June. As Lepanto in addition to being an important gold producer is one of the outstanding copper mines of the Far East, its plant expansion largely accounted for the greater copper output of the Philippine Islands. Production of 10,384 metric tons had a value of $4,127,082. This is almost double the value of copper produced prior to the war, the 1940 yield being $2,146,770. There were also substantial increases in the production of iron ore, manganese and lead while chromite output remained steady.

The total production of the Philippine Islands for 1950 (including nonmetallics) amounted to 73,142,819 pesos, which converted into dollars equals $36,571,420.00. This indicates a substantial over-all increase of more than 39 percent for the industry, 1949 production being valued at $26,197,873.

The outlook for the Philippine mining industry is for further steady growth. Recently the Bureau of Mines of the Republic of the Philippines compiled a schedule of estimated production for the coming three years as follows: 1951, 96,687,030 pesos, ($48,343,515); 1952, 114,779,030 pesos, ($57,389,515); 1953, 122,029,030 pesos, ($61,014,515).

These figures include an estimated production of 16,379,030 pesos annually to come from new mines, such output being contingent upon finances being made available for further rehabilitation of mines producing prior to the war. While these estimates must be considered as tentative it is interesting to note that the value of 1951 production should exceed the 1940 record high of $46,416,456.

Metallic Mineral Production in the Philippine Islands for the Years 1949 and 1950

Mineral	1949 Quantity	1949 Value* Pesos	1950 Quantity	1950 Value* Pesos
Gold**	287,844	25,066,694	333,991	33,339,100
Silver**	218,419	308,374	216,034	309,984
Lead***	550	292,300	879	497,580
Copper***	7,007	4,564,025	10,384	8,254,164
Chromite***				
Metallurgical	81,404	2,532,520	41,846	1,474,813
Refractory	165,340	3,318,050	208,665	4,173,100
Manganese (ore)***	26,288	944,194	29,867	1,161,463
Iron ore***	370,172	5,387,659	599,095	7,633,494
Total		42,413,816		56,903,698

*NOTE: Official Exchange Rate Two Pesos Equals $1.00
**Fine ounces
***Metric tons

NORTH AMERICA

CANADA

Area .....3,690,410 square miles
Population 13,845,000
Currency Unit .....Canadian Dollar
Value $0.9613

Chief Mineral Products: Nickel, gold, copper, lead, zinc, platinum metals, iron, uranium.

Production of metals in Canada in 1950 exceeded $620,000,000 in value, and with non-metallics included, the country's mine production exceeded $1,000,000,000 for the first time in history, being about $100,000,000 more than in the previous year.

Actual production was probably worth more than the official estimate indicates because the output of pitchblende in the Northwest Territories was omitted from the statistics for security reasons inasmuch as it is used as an atomic fuel.

Gold, valued at $168,500,000, was once again the leader in the parade of Canadian metals, with copper second, valued at $122,500,000.

The year closed with the gold operators seeking tax and other concessions from the Dominion Government so as to modify to some extent the extreme handicaps they have had to contend with in recent years owing to the rising costs of production and the fixed price of their product.

That 1950 was primarily a year for the base metals in Canada is largely because of the critical political situation overseas and the increasing demand for defense stockpiling. Exports to the United States were exceptionally high as a result.

The year was marked by success in financing the Labrador iron project by the Hollinger gold interests and a group of United States steel producers. Development of the Allard Lake titanium deposits in Quebec by Kennecott Copper Company and New Jersey Zinc Company progressed at a rapid rate.

Nickel production was maintained at a high level throughout the year, and copper and lead rose to new postwar highs. Other Canadian metals—cobalt, magnesium, silver and platinum—followed a generally upward trend both in production and value, and as a result base metal operations, especially during the second half of 1950, were exceptionally profitable.

Ontario was again Canada's largest mineral-producing province, with output over a third of the country's total. Quebec was in second place, and British Columbia third.

ONTARIO

Ontario has led Canada's provinces as a mine producer for a good many years, and recent developments indicate that Ontario is prepared to hold her own for some time. In addition to the continuing activity of the gold mines, there have been important advances in asbestos and uranium as well as iron ore and silver.

International Nickel is spending $100,000,000 preparing for mining of 13,000,000 tons of ore a year by 1953 against 9,800,000 tons in 1950.

The Porcupine camp continues to be one of Canada's great gold producers. The big operators are Hollinger Consolidated Gold Mines, Ltd., McIntyre Porcupine Mines, Ltd., Dome Mines, Aunor Gold Mines, Ltd., Porcupine Reef Gold Mines, Ltd., Paymaster Consolidated Mines, Ltd., Delnite Mines, Ltd., Buffalo Ankerite Gold Mines, Ltd., Broulan Porcupine Mines, Ltd., Hallnor Mines, Ltd., and Pamour Porcupine Mines, Ltd.

The Red Lake district added to its laurels with five of its seven producers setting new records last year. Campbell Red Lake Mines, Ltd., New Dickenson Mines, Ltd., and Starratt Olsen Gold Mines are among the new producers that are keeping the district in the front line, with Madsen Red Lake Gold Mines, Ltd., Cochenour Williams, Hasaga and a few others maintaining their record.

BRITISH COLUMBIA

With base metals heading the list as usual, British Columbia is likely to have a banner year in 1951, following a record-breaking 1950 when the mining industry's production was valued at $142,000,000, with every likelihood that this official preliminary figure will be exceeded when all the returns are in.

The Consolidated Mining & Smelting Company of Canada, Ltd., treating 10,500 tons of ore daily, dominates the province, and its continuing expansion was indicated by the company's decision to increase zinc treatment facilities by 15 percent. Consolidated has brought several promising new mines into production lately to share the load of the mighty Sullivan mine, source of most of the ore so far used in the great metallurgical and chemical plants of Trail, Warfield and Tedanac.

Only five or six gold mines are currently active as against 25 during the pre-war period, with Bralorne Mines, Ltd., Pioneer Gold Mines of B. C., Ltd., Cariboo Gold Quartz Mining Co., Ltd., and Island Mountain Mines Co., Ltd., continuing to head the production parade.

There has been a revival of interest in iron ore, and Utah Construction Co. is hauling ore from the Quinsam deposits, which are being developed for export trade to Japan.

QUEBEC

Quebec mining interest has been focused on development of iron deposits on the Labrador-Quebec boundary, and 1950 saw a start on construction of the 360-mile railroad to serve the area where an investment of some $200,000,000 is planned by a group representing Hollinger Consolidated Gold Mines, Ltd., and several United States' steel companies. Preparation of the ore deposits for mining will be started in 1953, and the first shipments probably will move out over the railroad the following year. By the end of 1950 more than 400,000,000 tons of high-grade ore was indicated for an open-pit operation.

There have been significant developments in copper, with a big new deposit being discovered in the Gaspe Peninsula district, and a major zinc-bearing ore body has been located in the Amos district. Copper-zinc-gold properties in the Chibougamau district continue to go forward their operators, and continued expansion proceeds in the Allard Lake district where Quebec Iron & Titanium Corporation, a subsidiary of Kennecott Copper Corporation and New Jersey Zinc Company are financing a $30,000,000 project for ilmenite (titanium) production.

Most emphasis in Quebec mining during 1950 was on base metals, but there has been activity in gold properties, too. This year may be the biggest for the Rouyn district in history.

PRAIRIE PROVINCES

Canada's midwest mining region, comprising Manitoba, Saskatchewan and Alberta, witnessed interesting developments on the uranium front as a result of the decision of Eldorado Mining & Refining Co. to go ahead with its program at Ace Lake in the Athabaska area of Saskatchewan. More than $2,000,000 of private and public investment has been put into the search for uranium in that section.

Hudson Bay Mining & Smelting Company continued to be the big base metal operator in Manitoba and Saskatchewan and its new zinc-fuming plant built in 1950 should be an important asset.

N.W. TERRITORIES AND YUKON

The mineral wealth of Canada's Northwest Territories and adjacent Yukon was worth nearly $16,000,000 in 1950 on a production basis—up from less than $12,000,000 the previous year—and this advance is indicative of the general mining trend of that vast northern area.

However, there has been considerable expansion in gold, silver and lead production and this accounts for the statistical improvement. The Mayo silver-lead-zinc camp is active again as a result of the success of the United Keno Hill Mines, Ltd., which now has several properties in addition to its main Hector operation.

The big placer operator in the Yukon continues to be Yukon Consolidated Gold Corporation, which produced nearly $2,500,000 in gold during the first ten months of 1950 and will probably do even better next season if weather and labor conditions favor.

NEWFOUNDLAND

Shortage of base metals has stimulated the search for our promising mining properties in Newfoundland, and as a result of widespread exploration in 1950 three new mines are expected to get into production in 1951.

Falconbridge Nickel Mines, Ltd., has taken options on copper deposits at Gull Lake, Rambler and Tilt Cove, and subsidiary companies may be organized to operate them should preliminary development be favorable.

Copper properties at York Harbor and Gregory River are also being worked, and considerable interest is being shown in a deposit of chalcopyrite at Pilley's Island, where Frobisher, Ltd., and Halcrow Swayze Mining Company, Ltd., are financing development.

New POWER FEEDS for Thor DRIFTERS

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Drills
Grinders
Electric Hammers
Impact Wrenches
Paving Breakers
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On the job demonstrations of new Thor Power Feeds now being arranged! See how these powerful, precision controlled drive units can *save you money* — EXTRA FOOTAGE, LESS MAINTENANCE, FEWER STUCK STEELS, ALMOST COMPLETE ELIMINATION OF BROKEN BITS.

For use with powerful No. 82 and 92 Thor Drifters, new Power Feeds are available in three sliding cone shell lengths—24"x24"; 30"x30"; and in a new stress-proof aluminum shell, 48"x48", weighing actually less than the 30"x30" in steel!

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AIR BAR FEEDS—for converting hand-feed drifters, and sinkers, to power feed. Simple, efficient.

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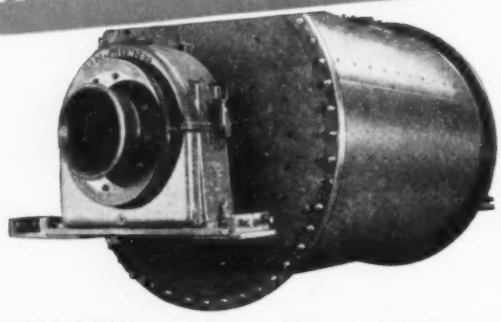
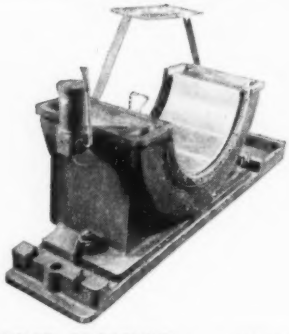
Thor PORTABLE POWER TOOLS
ELECTRIC • PNEUMATIC

Engineered for *Grinding Mills*

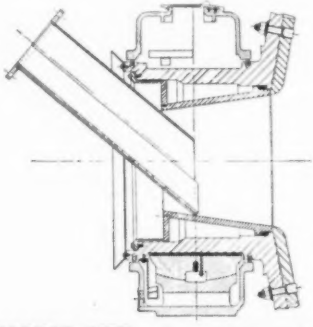
ALLIS-CHALMERS TRUNNION BEARING



EXTRA LARGE — Diameter of king-size Allis-Chalmers trunnion bearing is almost twice the bearing length, large enough to permit spout feeding. Large bearing proportions will provide long service despite heavy-going demands on mill. Internal oil system can be checked visually by means of hinged flap on bearing housing.



LOW BEARING PRESSURE — A spherical seat keeps mill in perfect alignment with bearings. Load is distributed evenly across full face of bearing, reducing wear. Cooling coils embedded in babbitted bearing cool the oil at point where most heat is generated. Piston ring seals hold oil in and dirt out . . . oil supply is always clean.



LONG BEARING LIFE — Internal oiling buckets carry lubricant to oiling pan. Oil is supplied the instant mill is started. All large bearings are fitted with lubricant pump for floating the mill during starting. This overcomes high starting torques and eliminates "dry" starting after shut-downs, which causes about 75 percent of bearing wear.

During normal operation, a film of lubricant separates trunnion from bearing. No metal to metal contact.

After a short shut-down period the thickness of this protecting film of lubricant is reduced.

After long shut-down, lubricant film is broken entirely. The result is damaging metal to metal contact between trunnion and bearing.

Lubricant pump floats the mill before starting . . . re-establishes protecting film of oil. Power needed for starting is greatly reduced, too.

Additional facts about trunnion bearings and other modern features of Allis-Chalmers grinding mills may be obtained without obligation from the A-C representative in your area or by writing to: Allis-Chalmers, Milwaukee 1, Wisconsin.

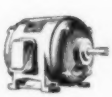
A-3348

Texrope is an Allis-Chalmers trademark.

Trunnion bearings are built by Allis-Chalmers in 10 sizes from 14 x 8 to 54 x 22-in. The six smallest sizes are available as grease lubricated bearings; seven largest sizes as oil lubricated bearings.

ALLIS-CHALMERS

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.



Motors

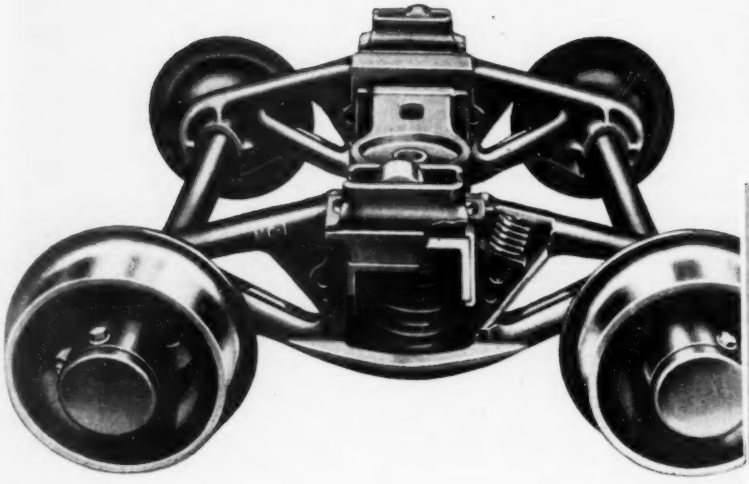
Controls

Texrope Drives

Vibrating Screens

Crushers

Kilns, Coolers, Dryers

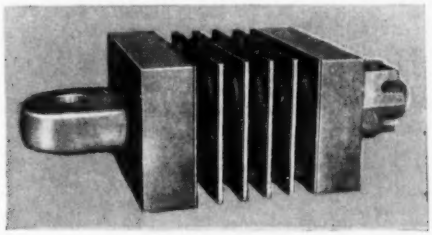


The NC-1 Truck climaxes 20 years of intensive research, providing (through the friction control mechanism shown in cutaway) protection to equipment, roadbed and lading with maximum wear life.

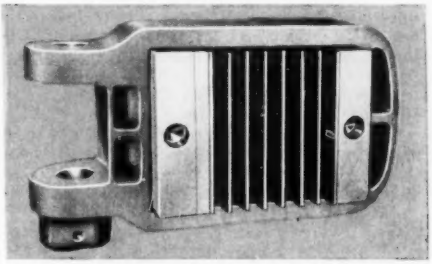
Willison Automatic Couplers save time with maximum safety . . . can be coupled at either end of car or locomotive . . . require no manual assistance. Close coupling eliminates damaging slack, permits high speeds with maximum stability.

NATIONAL *products cut per ton costs!*

Latest example of National's pioneering in better equipment is the NC-1 Truck. Its sweeping advancements over conventional trucks include long soft springs, a friction mechanism—controlling vertical and transverse oscillations, a cast one-piece bolster with large lubricated center connection, and automatic frame alignment. The NC-1 has been designed with the same factor of safety that is required by the Association of American Railroads for full size railroad trucks, and embodies the same features which A.A.R. tests have shown to be essential to produce good riding qualities. For the best in profitable equipment, *always specify National products.*



National M-230 Rubber-Cushioned Draft Gear for cars operating through rotary dump. Soft initial-action, high-capacity rubber pads provide maximum impact protection, lengthen equipment life. Available in a range of capacities and design variations to fit individual requirements.



M-225 Rubber-Cushioned Draft Gear for locomotives and large capacity cars not required to operate through rotary dump. Maximum protection in minimum space.

A-0863

NATIONAL Products FOR TRANSPORTATION AND INDUSTRY Est. 1868

NATIONAL MALLEABLE and STEEL CASTINGS COMPANY

WILLISON AUTOMATIC COUPLERS • NC-1 TRUCKS • DRAFT GEARS • NACO STEEL WHEELS

EUROPE

FRANCE

Area ..... 212,659 square miles
Population 41,550,000
Currency Unit ..... Franc
Value $0.002858

Chief Mineral Products: Bauxite, potash, iron, lead, zinc, pyrite, tungsten.

The French steelmaking industry, after the first nine months of 1950, when output was comparable to 1949, manifested an acceleration after October, 1950. Many open hearth furnaces were started at that time and the production of cast iron in October reached 743,000 tons, compared with the average monthly output for 1948 and 1949 of 550,000 and 700,000 tons, respectively. In October the production of steel, totaling 853,000 tons, surpassed all previous monthly records. The total production for 1950 was 7,768,000 tons of cast iron and 8,651,000 tons of steel. The output of iron ore in 1950 was 30,000,000 tons compared to 31,300,000 in 1949.

The production of lead and zinc ore is increasing in importance. Eleven operations, of which nine are mixed lead-zinc, in 1950 produced 18,000 tons of lead ore and 25,000 tons of zinc ore. In the pre-war year of 1938 the production was respectively, 5,700 tons of lead and 200 tons of zinc. France's needs for lead ore are satisfactorily covered by importations from French North Africa. These French possessions also furnish 25,000 tons of zinc ore. The African source being inadequate, France had to import nearly 90,000 tons of other zinc ore during 1950.

The two French lead smelters (Noyelles-Godault and Estaque) produced 61,200 tons of lead bullion in addition to the lead of French North Africa origin. This production nearly fulfills the French needs. To satisfy the market demand entirely only 7,000 tons of additional metal had to be imported. The five zinc smelters (Viviez, Auby-les Douai, Noyelles-Godault, Creil and Mortagne) produced 71,000 tons of slab zinc in 1950. The amount was inadequate and necessitated the importation of 89,000 tons of metal.

The copper smelter (Palais) in 1950 produced 14,500 tons of wire bars, billets, plates and cathodes.

The production of pyrite was 247,300 tons, an increase of 42,000 tons compared with the previous year's output. This increase is mainly due to the mining operation in Sain Bel (Société de St. Gobain).

According to the production potentiality of the equipment at the Montmin and Puy les Vignes mines it is expected that one-half of the nation's needs for tungsten will be produced in 1951. The 1950 output figures for this metal was only 400 tons.

The production of raw potash salts has risen to 5,581,000 tons, which is an increase of 67 percent compared with prewar figures (3,323,000 tons in 1938). Output measured in K_2O content was 1,000,000 tons in 1950 compared with 579,000 tons in 1938.

The Canari asbestos mine (Corsica) resumed production in July, 1949, and had produced 1,374 tons of asbestos by the end of the year. The 1950 production was 6,100 tons, reaching the first step in the production plan which the Societe Miniere de l'Amiante decided on after modernization of its equipment. The company expects to produce 10,000 tons in 1951.

The Societe Languedocienne de Recherches et d'Exploitations Minieres extracted in 1950 from its "Malvesy" deposits at Aude 145,000 tons of sulphur material averaging eight percent S. At the end of the year, this company began delivery of pure sulphur (850 tons during the last two months) and of enriched ore containing 48 percent S. (150 tons in the same two months).

Among less important French productions should be cited gold (1,975 kilograms); nickel metal (3,420 tons); antimony (900 tons of ore, white metal, 1,125 tons); cobalt (116 tons); magnesium (46 tons); and cadmium (75 tons). The gold mines at Salsigne resumed, at the end of the year, the production of bismuth (some four tons monthly). The exploration for copper and tin has given, respectively, 150 and 180 tons of ore.

France also produced barite, 23,000 tons; fluorspar, 35,000 tons; fossil silica, 23,000 tons; and talc, 90,000 tons, recent production of which has been more or less stationary for the past several years.

UNITED KINGDOM

Area ..... 94,279 square miles
Population 50,603,000
Currency Unit ..... Pound Sterling
Value $2.80

Chief Mineral Products: Tin, fluorspar, lead, barite, iron.

Although there was a little increased activity in metal mining in 1950 because of the advance in prices, no spectacular changes took place. What new mines were opened are relatively small and restricted mainly to lead and nonmetallic minerals.

In Cornwall, the sharp rise in the tin price, starting in August although contributing very materially to the profits of working mines during the second half of the year, has not brought to light any new projects of any size. Production of tin was steady throughout the year at Geevor Tin Mines, Ltd's mine with a slight increase (to 62 tons in November and December) at the end of the year so that 680 tons of concentrate was produced in 1950.

The unwatering of New Consols Mines, Ltd.'s property near Callington, Cornwall, continued during the year. The existing stage-pumping arrangement reportedly will be replaced by duplicate centrifugal pumps of 1,000 gpm. capacity placed at the 380 foot level. A further set will be installed in the bottom when dewatering is completed and sinking commenced. Good development is reported on the eastern extension of Wheal Consol's main lode in the shallower levels, and a crosscut is being driven to intersect other lodes. The concentrating plant has been running on ore mined from the upper levels for some time, and the Californian stamp battery is to be replaced by a Hardinge mill, the classification improved and further table capacity added to bring the plant to a 200-ton-per-day level. Two new compressors were installed, and the aerial ropeway from mine to mill was completed during the year.

At the Castle-an-Dinas wolframite mine, production has been rather low but the exceptional rise in the price of tungsten has enabled the company to mine several blocks of ground previously deemed unpayable and to plan to put down some bore holes to explore the granite intrusion with a view to deciding on further development in depth.

In Derbyshire, Constables (Matlock Quarries) Ltd. continued to operate its Masson mine as an openpit. The ore is trucked to Megdale, adjoining the company's limestone quarry, where it is dressed by washing, jigging and table flotation at a rate of 100 to 150 tons per day. The company also buys outside ores and is the largest producer of gravel or metallurgical spar in the country, being responsible for about 50 percent of the total output.

Around Durham and Cumberland, the Anglo-Austral Mines Ltd. is opening up a number of lead-fluorspar mines. The company, which represents the mining interests of the National Smelting Company and the Imperial Smelting Corporation, has taken over the old Vieille Montagne mine near Nenthead, Alston, in Cumberland, and is now milling dumps from the Rodderup mine for the recovery of fluorspar. Some 60,000 tons is estimated to be available for treatment. The company is sinking at the Haggs mine, Nentesbury, on a lead lode, is doing some work at the Heights mine in Weardale, at Cambokeels fluorspar mine at Eastgate in the same district, and is operating the Cow Green barite mine in Teesdale.

B. Laporte Ltd. continued to work the Silverband mine, Westmoreland, and has installed Humphrey spirals to treat fines from the washers. The company is working the Bridford mine, near Exeter, formerly the property of the Devonshire Baryta Company. A new plant has been erected at the Coldberry mine, near Middle-in-Teesdale to treat barite.

The production of china clay has continued at a high level and in 1950 the total export of china clay was 405,223 tons valued at £2,056,948, compared with 295,233 tons worth £1,403,385 in 1949, and 335,596 tons worth £1,524,944 in 1948.

In Scotland, the Muirshiel mine, which is operated by the Muirshiel Barytes Company, Ltd., comprising the Anglo-Austral Mines, Ltd., and James Miller, Sons & Company, Ltd., has been running since the middle of the 18th century, although up to 1920, when it closed, production was on a small scale. The mine was reopened in the early 1940's and over 40,000 tons has been mined in the last seven years. Production in 1950 was at the rate of 1,000 tons per month, and the reserves in the mine are good. During the past year much equipment was modernized, and an extensive program of exploration and diamond drilling was started.

GREECE

Area ..... 54,092 square miles
Population 7,960,000
Currency Unit ..... Drachma
Value $0.0002

Chief Mineral Products: Lead, zinc, silver, pyrite, bauxite, emery, chromite.

After ten years of destructive warfare, 1950 for Greece was a year of peace and progress. Despite many changes in the government, with its laws and tax procedures detrimental to the encouragement of local and foreign capital investment, the impetus of ECA financial aid and technical assistance brought about many progressive improvements. Basic to the revitalizing of the mining industry was an ingenious plan for subsidizing exported tonnage of ores which increased export from 100,003 tons in 1949 to 196,225 tons in 1950. This scheme was devised by American financial experts in the Foreign Trade Board of the Greek Ministry of National Economy and did much to bring out the new mine production.

Then, too, in order to evaluate the mineral possibilities of the country accurately and intelligently, a new geological staff was organized in the Ministry of Coordination. This action necessitated the procuring and training of a staff of 20 Greek geologists and engineers. Austrian, German, French, Swiss, and American specialists were engaged to work with the Greek geologists in the field, and aerial photographs were used as base maps in the field. The latest techniques of photo-geology were put into use, and it was found practical to combine geophysical and core drilling with geological mapping to obtain the maximum information in the shortest time.

There is a large potential tonnage of bauxite in Greece. It is the monohydrate type, formed by the alteration and erosion of limestone. It is used chiefly in the Bayer process alumina plants of western Europe and for the quick setting cement industry. There are several mines now in production, and many undeveloped possibilities.

The first American private capital to be invested in mining in Greece since the war is that of Mediterranean Mines, Inc. On the side of a barren hill overlooking the blue Aegean and the historic town of Laurium, a modern, 250 ton per day, flotation mill is nearing completion. Nearby, in a handsome white stone building of Island architecture, is a modern metallurgical and chemical research laboratory.

A similarly modern research laboratory was put into operation this year on the Island of Milos. The Silver and Barytes Mining Company is there producing barite for the paint and oil exploration business.

The French Laurium operations, which have long been established in the production of lead metal and zinc concentrates, are also expanding production. A privately financed exploration program is underway, including a new shaft to be 450 meters deep.

The Hellenic Company of Chemical Products and Fertilizers, Ltd., expanded its pyrite production from 10,000 to 15,000 tons per month.

CYPRUS

Area ..... 3,584 square miles
Population 476,000
Currency Unit ..... Pound Sterling
Value $2.80

Chief Mineral Products: Copper, pyrite, gypsum, chrome, asbestos.

The Island's mining activities during 1950 are amply summarized in the following passage from Governor Sir Andrew Wright's recent annual budget address: "The mining industry enjoyed a record year. The value of minerals exported was approximately £5,000,000 compared to £3,500,000 in 1949, over 5,000 workers were employed in the industry and no labor disputes have been recorded. A considerable amount of exploration was carried out for new deposits of pyrite but no major discoveries have yet been confirmed. A free grant was received from the Colonial Development and Welfare Fund to cover a detailed geological survey of the Island. A senior geologist has arrived and started work."

Supplies of both materials and equipment eased considerably during the first five months of the year but the position was reversed soon after the Korean war and most U.K. and Continental firms have been unable to enter new orders with deliveries behind six to nine months.

Similarly, during the first months of the year the pyrite producers were faced with awkward problems in the disposal of their overall production owing to the inability of Continental sulphuric acid manufacturers to take up the quantities of pyrite contracted for. The position changed radically during the second half of the year, when mines were unable to cope with demand.

Demand for gypsum rock continued in 1950. A quantity of 53,094 metric tons was exported during the year as against 16,951 metric tons during the preceding year. The whole tonnage was quarried and sold by the Gypsum & Plasterboard Company Ltd. which is now completing installation of a gypsum products plant, originally expected to start operations towards the end of 1950. The company hopes to be able to start exports of building plasters wallboard and baseboard by July 1951.

The largest part of the iron and chalcopyrite production went as uusal to Germany, the only natural market in Western Europe for this type of pyrite since the two German plants at Duisburg and Lubeck are the only installations capable of treating the residues economically.

Export of Principal Mining & Quarry Products from Cyprus in Tons and Their F.O.B. Value During the Years 1949 and 1950

	Quantity		Value F.O.B.	
Product	**1949**	**1950**	**1949**	**1950**
Asbestos	11,098	15,471	520,795	729,912
Chromium ore	14,640	18,150	115,120	215,260
Gold-Silver precipitates[1]	18	30	251	40,872
Pyrite (cupreous)	77,820	111,210	287,153	612,300
Pyrite (iron)	401,768	533,501	853,549	1,507,443
Copper (cement)	2,020	685	96,970	54,800
Cupreous concentrates	111,390	103,679	1,731,142	2,170,200
Gypsum (burnt)	7,030	9,465	22,649	26,040
Gypsum (stones)	16,951	53,094	12,531	31,428
Terra Umbra, raw not powdered	362	1,176	3,317	9,160
Terra Umbra, raw powdered	81	87	974	1,050
Terra Umbra, burnt, not powdered	2,751	5,001	24,758	43,672
Terra Umbra, burnt powdered	431	800	5,226	9,583

[1]Measured in cwt.

FINLAND

Area ..... 136,054 square miles
Population 4,016,000
Currency Unit ..... Markka
Value $0.004348

Chief Mineral Products: Copper, pyrite, gold, zinc, tungsten

Metal mining in Finland during 1950 was paralyzed by a two-month strike during September and October.

Vuoksenniska Company's Haveri gold mine resumed operations after rebuilding its concentrator destroyed by fire in 1949. In the new plant, flotation concentrates are given cyanide treatment. During 1950 only 32,643 tons of ore were milled resulting in 62 kilos of gold. The annual capacity of the new plant is about 100,000 tons of ore. This plant is the only cyanidation plant in Scandinavia and one of the very few ever built in Europe.

Outokumpu Company's four mines Outokumpu, Aijala, Ylöjärvi and Orijärvi were operating at a full capacity for 10 months. The production of the Outokumpu mine in 1949 was 583,410 metric tons of ore resulting in 16,900 metric tons of copper in copper concentrate, 4,326 tons of zinc concentrate and 175,908 tons of pyrite concentrate. The final figures for 1950 will be approximately 85 percent of the figures given above.

The two other copper mines of the Outokumpu Company, e.g., Aijala and Ylöjärvi, produced about an equal tonnage of ore and again about 85 percent of their annual capacity of 100,000 tons. The amount of copper in the copper concentrates may be estimated at 2,500 tons. In addition the Aijala mine produced 10,000 to 15,000 tons of pyrite concentrate and the Ylöjärvi mine a small amount of scheelite concentrate (in 1949, 36 tons assaying 76 percent WO_3).

Outokumpu Company will reopen its Nivala nickel-copper mine in 1951. It will also open a new zinc mine about one km. from Aijala. The ore will be treated in the Aijala concentrator.

The Orijärvi mine treated mainly old surface dumps. In 1949 it produced 130 tons of lead, 373 tons of zinc and 148 tons of copper in respective concentrates. The figures for 1950 are likely to be somewhat higher due to increased capacity of the flotation plant.

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SWEDEN

Area ..... **173,105 square miles** **Currency Unit** ..... **Krona**
Population ..... **6,956,000** **Value** **$0.1932**

Chief Mineral Products: Iron, copper, gold, pyrite, lead, tungsten, zinc.

Production and export of iron ore, iron, steel and ferroalloys increased in 1950 over that of 1949. A total of 12,900,000 tons of iron ore was exported compared to 12,700,000 tons in 1949. Iron and steel exports increased from 155,900 in 1949 to 216,000. The iron and steel industry had a busy and prosperous year with orders the largest for several years. The price for iron was increased by seven kroner per 100 kilos to compensate for the higher raw materials prices. Despite the fact that 900 more men were employed in the steel mills at year's end than at the start, a shortage of labor existed.

The Boliden Company, Kristineberg, received a permit for construction of a central concentration mill with an annual capacity of 250,000 tons of ore to cost an estimated 10,000,000 kroner. The Grangesberg (TGO), iron ore mine, the deepest iron mine in Europe, made plans to sink its Klingspor shaft to a depth of 1,000 meters to establish two new levels, the 880 and 1,000.

At the Kirunavaara mine near Kiruna the first of four or five new shafts was begun and the program of mine mechanization was continued. Changes to sublevel stoping from shrinkage stoping progressed during the war. The Norrbottens Jarnverk AB Company was authorized by the Swedish government to erect a new iron and steel plant at Lulea and purchased a blast furnace from the Goring Steel Works at Linz, Austria. The SKF's (Swedish Ball Bearing Plants) new Hofors mine at Vingersbacke produced its first iron ore during the year.

WEST GERMANY

Area ..... **96,600 square miles** **Currency Unit** ..... **Deutsche mark**
Population ..... **48,000,000** **Value** **$0.2381**

Chief Mineral Products: Lead, zinc, copper, potash, iron.

The output of the chief mine products in Western Germany increased about 23 percent by weight in 1950 over 1949, and smelter production by 33 percent. As foreshadowed in last year's report, Western Germany had to resume importations of lead and zinc ores with war-time stocks of scrap depleted. About 18,500 tons of lead and 31,700 tons of zinc were produced from foreign ores in 1950.

Increases in mine output of nonferrous metals will be moderate in 1951, since most of the mines are working at capacity. The only major new feature in lead-zinc mining is the development of the Stolberger Zinc AG group's Maubach deposit, now estimated to contain 28,000,000 tons of 3.0 percent lead and 2.0 percent zinc. An ore dressing plant is being erected with an initial daily capacity of 400 tons of crude ore, to be increased to 3,000 tons daily within three years. Some rather promising prospecting for lead-zinc deposits, similar to those being worked at Stein V and Christian Levin is going on in the Ruhr coal district, but several years will elapse before an increased production from these sources may come forth.

The Reichenberg shaft of the Sontra copper mine, which was dewatered last year, was flooded in November 1950, so that production came to a standstill. But the authorities have decided that the mine will be dewatered again with the help of state subsidies. So a moderate production of copper may be derived from this mine in the future.

Mine Production in Western Germany in Metric Tons for 1948, 1949 and 1950

Ore	1948	1949	1950[1]
Lead ores[2]	24,200	41,300	44,800
Zinc ore[2]	34,600	58,300	69,300
Copper ores[2]	360	860	1,400
Pyrite	383,100	430,400	534,000
Iron ore (crude weight)	7,275,000	9,111,900	10,883,300
Iron ore (iron content)	1,919,000	2,435,700	2,939,400
Potash salts (crude weight)	5,277,000	7,290,000	9,000,000
Potash salts (K_2O content)	540,000	748,800	930,000
Salt (rock and evaporated)	2,036,000	1,800,000	2,480,000

[1]Preliminary figures
[2]In recoverable metal content

NORWAY

Area ..... **124,984 square miles** **Currency Unit** ..... **Krone**
Population ..... **3,233,000** **Value** **$0.14**

Chief Mineral Products: Iron, pyrite, lead, zinc, copper, molybdenum.

In 1950 the total production from Norwegian mines was approximately the same as that for 1949 with all the operating mines of 1949 continuing their production in 1950. There was only one shutdown, for four weeks, at one pyrite mine during the year. The wages increased about five percent because of the increased prices for food and the like, and further increases in wages are expected in 1951 when all the results of currency devaluation are known.

The rebuilding of Sydvaranger Iron Company's plant is going ahead and will be completed this year. Production will probably be started during the summer and will reach about one-half of the total capacity by 1952. The construction of the steel plant at Mo i Rana with the hydroelectrical power station at Rossaga was continued during 1950.

Production of sulphide ore in 1949 was 700,000 tons, 60 percent of which was from the Orkla-Grube pyrite mines. Production in 1950 was about the same. Copper concentrate is smelted at Sulitjelma and Roros; the first produced about 3,000 tons of blister copper and the latter about 500 tons of refined copper.

The new inclined, 1,500 meter, shaft at Killingdal Mines reached a depth of 500 meters. The average sinking progress per week was 11 meters, but the company hopes that the average rate in 1951 will be increased to 12 meters. Operation of the new flotation plant at Trondheim by the same company will be delayed, but the plant is scheduled to be in production in November 1951.

At the Skorvass mines, controlled by Elektrokjemisk A/S Oslo, the construction of a mill, ropeway, docks and other facilities is continuing. The total cost is estimated at 19,000,000 kroner, of which 12,000,000 kroner is guaranteed by the government. Most of the products from complex pyrite mines were as usual exported.

In southern Norway one mine produced uranium ore. Another mine produced sovitt containing niobium.

The Knaben Mines, Norway's most important molybdenum producer reported only a small output for 1950 as underground work was concentrated on development.

AUSTRIA

Area ..... **32,360 square miles**
Population **7,000,000**
Currency Unit ..... **Schilling**
Value **$0.03827**

Chief Mineral Products: Iron, magnesite, antimony, lead, zinc.

The output of copper ore in Austria is to be increased from a monthly average of 5,700 tons in 1950 to 12,000 tons per month in 1951. A total of 2,750 tons of refined copper will then be available from domestic mines. Lead-zinc ore production is to be increased by 12 percent in 1951. Lead concentrates are smelted at Gailitz, while zinc concentrates have been exported. Zinc smelting facilities are being installed at present. Furthermore 17,400 tons of aluminum were produced in 1950 against 14,835 tons in 1949 and 13,319 tons in 1948. Aluminum output in 1951 is estimated to reach 23,000 tons. Some antimony concentrates are coming from the Rabant mine in Eastern Tyrol.

Austrian Mine and Smelter Production in Metric Tons in 1949 and 1950

Commodity	1949	1950
Iron ore	1,488,021	1,859,413
Lead-zinc ore	91,016	98,631
Copper ore	55,802	70,946
Antimony ore	9,497	9,430
Pyrite	11,672	12,489
Graphite	14,093	14,687
Talc	52,154	53,707
Feldspar	1,914	3,752
China clay (crude)	152,831	181,785
China clay (washed)	47,303	51,467
Kieselguhr	3,361	3,416
Barite	8,000	10,119
Clay	40,375	41,101
Magnesite (crude)	520,737	544,753
Magnesite (dead burnt)	168,361	168,623
Magnesite (caustic	72,698	89,351
Magnesite (bricks)	109,035	112,177
Aluminum	14,797	17,990
Pig lead (soft)	8,551	9,359
Pig lead (antimonial)	1,293	1,547
Copper (electrolytic)	3,763	5,133
Copper (fire-refined)	2,199	3,925

SPAIN

Area ..... **195,510 square miles** **Currency Unit** ..... **Peseta**
Population ..... **28,287,000** **Value** **$0.08913**

Chief Mineral Products: Mercury, lead, gold, potash.

Spanish mineral production in 1950 increased over 1949 despite the factors which continue to contribute to the general confusion. These factors follow the limited electrical production, partially brought about by the disruption in the progress of the new central electrical plant and the scarcity of adequate utilities.

Despite these contingencies, metallic lead production, which in 1949 did not exceed 30,000 tons, reached 40,000 tons in 1950, and of this, approximately one-half was exported. The increased production is accounted for by the discovery of new mines, higher prices in the domestic market, and to the second washings of old workings. Because of the mining activity in La Sierra de Cartagena and in other regions, we have reason to hope for a 1951 production exceeding 50,000 tons.

Iron production reached 3,000,000 tons, of which 850,000 tons came from Marruecos. Some 1,500,000 tons of pyrite and 6,477 tons of copper were produced.

The production of zinc reached about 20,800 tons, an increase of about 516 tons over 1949. Also, and especially toward the end of the year, tungsten mining increased and production of wolframite was 800 tons.

The Minas de Almaden has sold over 120,000 flasks of mercury, more than in their long history of controlling all the Spanish mercury activity and being masters of the world market.

THE NETHERLANDS

Area ..... **15,764 square miles** **Currency Unit** ..... **Guilder**
Population ..... **10,103,000** **Value** **$0.2632**

Chief Mineral Products: Salt, cement, glass sand.

Salt production of the Royal Netherlands Salt Industry reached a high of 410,000 tons in 1950. This important rise is mostly due to exports of salt to Scandinavia. The production of 1949 amounted to 330,000 tons.

The tin smelter of the Billiton Company at Arnhem operated during 1950 at full capacity. Besides tin and several alloys of that metal, the smelter now also produces slagwool of excellent quality.

For several years production of glass sand of excellent quality has been made in Sth. Limburg. Production in the last several years has amounted to 200,000 tons annually. The sand is of such high quality that export to distant countries has been feasible. The iron content of the sand is extremely low, being less than 0.010 percent.

ITALY

Area ..... **119,800 square miles**
Population **45,996,000**
Currency Unit ..... **Lira**
Value **$0.0016**

Chief Mineral Products: Mercury, pyrite, sulphur, lead, zinc.

During 1950 the Italian government followed with the closest interest the developments of the Italian mining industry in view of its importance to the economy of certain regions such as Sicily, where every effort has been made to rebuild the sulphur industry. The following production figures clearly indicate the results of the efforts in Sicily: 1950, 225,000 tons; 1949, 199,000 tons; 1948, 186,000 tons; 1945, 67,000 tons; 1938, 337,000 tons. With Marshall Plan funds construction of the first Italian sulphur flotation plant was started at the Cozzo Desi mine of Castel Termini (Sicily). Formerly only 60 percent of the sulphur was recovered but with the new equipment recovery will be possible up to 95 percent. Early in 1950 important stocks of unsold sulphur existed in Italy, however, with the international developments which followed the Korean War, the Sicilian sulphur industry has been able to sell its entire output, especially in the Middle East and in Australia.

Noteworthy activity was shown by the Elba iron mines which are supplying increased tonnages to the Piombino and the Bagnoli iron and steel works, where new furnaces recently were placed in operation. Also, uranium in 1950 attracted the attention of leading Italian mining concerns such as the Montecatini Company, which started the development of uranium deposits in the Cuneo district.

Reopening of the Monte Amiata mercury mines increased production of mercury during the year.

Production of Ore in 1950, Metal in 1949 and 1950, in Italy in Metric Tons

Ore	1950	Metal 1949	Metal 1950
Aluminum		26,000	36,000
Antimony	4,311	.....	.....
Bauxite	132,100	.....	.....
Iron	1,115,000	.....	.....
Manganese	46,115	.....	.....
Lead	68,334	27,000	36,000
Zinc	215,115	26,000	37,000
Copper	25,223	.....	.....
Tin	617	.....	.....
Asbestos	1,230	.....	.....
Pyrite	960,000	.....	.....
Sulphur	225,000	.....	.....
Steel	.....	2,000,000	2,340,000
Mercury	150,000	1,535	1,645
		(44,515)[1]	(47,705)[1]

[1]Flasks

SOUTH AMERICA

BOLIVIA

Area ..... **416,040 square miles**
Population **3,990,000**
Currency Unit ..... **Boliviano**
Value ..... **$0.0165 (official)**

Chief Mineral Products: Tin, tungsten, lead, zinc.

The most important mining development in Bolivia in 1950 was the decree of October 30, requiring the large tin producing companies to sign production contracts with the government. The signing took place on November 15, when representatives of the Patino Mines and Enterprises, Consolidated Mauricio Hochschild Company and the Cia. Aramayo de Mines en Bolivie mining groups signed individual contracts.

These contracts specified the delivery of foreign exchange derived from exports of high-grade tin concentrates containing 35 percent or more of tin. The contracts also fixed production and export quotas which the companies must meet to avoid penalties. Output and exports are identical inasmuch as the country's entire production is exported.

The text of the contract signed by the Patiño group was similar to those signed by the Hochschild and Aramayo groups except that production quotas were not the same.

Patiño agreed to increase production within two months to an annual rate of 14,160 metric tons of tin-in-concentrates and to an annual rate after six months of 15,488 metric tons. Aramayo's contract called for an annual production rate of 2,520 tons after two months, and 2,756 tons after six months. Hochschild's contract specified 7,320 tons annually after two months and 8,006 tons after six months.

Failure to comply with production quotas would result in the companies having to surrender to the Central Bank of Bolivia an additional foreign exchange equal to 10 percent of the value of the required tonnages they failed to export.

The government decree of October 30 fixed the entire production of tin-in-concentrates in Bolivia at an annual rate of 32,000 metric tons after two months and 35,000 tons after six months. Of this total the Patiño, Hochschild, and Aramayo groups were required to furnish 75 percent or 24,000 tons after two months and 26,250 tons after six months. The 1950 production of Bolivian tin-in-concentrates was estimated at between 30,000 and 32,000 metric tons. The 1949 output was 34,750 tons.

Earlier in the year the Hochschild and Aramayo groups completed negotiations to sell their production to the U. S. Reconstruction Finance Corporation. The Patiño group exports its production to the United Kingdom.

Bolivia had one small experimental lead smelter in service during 1950 producing about 750 kilograms a day of 99.28 to 99.37 percent lead. The operators of this smelter were considering during the year construction of another smelter at Tupiza, designed to produce 10 tons of lead daily.

BRAZIL

Area ..... **3,286,170 square miles**
Population **50,350,000**
Currency Unit ..... **Cruzeiro**
Value **$0.05405**

Chief Mineral Products: Iron, Manganese, Ilmenite, gold, diamonds, beryl.

All preliminary production figures for 1950 indicate that there was an increase of 50 percent for pig iron, 43 percent for steel, and 30 percent for rolled products over the corresponding 1949 production.

The Companhia Siderúrgica Nacional, which owns the steel mill at Volta Redonda, is responsible for most of the increases. The credit of $25,000,000 recently granted by the Export-Import Bank will be used for further expansion of the Volta Redonda facilities.

The Acesita steel mill in Minas Gerais state will have, when completed, a daily capacity of 200 tons of high-grade steel.

The Rio Doce valley is a very important area for minerals and ores. There are already many mines in operation and many others to be open in the near future. Famous are the iron and manganese mines located at Itabira, Congo Soco, Santa Barbara, Alegria, Ouro Preto, and Mariana.

During the past 10 years the Itabira Iron Ore Company, which is run by the Companhia Vale do Rio Doce, has exported considerable amounts of iron ore from its property near Vitoria.

The "ICOMI" (Indústria e Comércio de Minérios S.A.), concessionaire of the manganese deposits located in the territory of Amapá, has secured from the International Bank for Reconstruction and Development a credit for expansion of its facilities. The credit will be guaranteed by the Brazilian Treasury.

Within three years the deposits will be producing 500,000 metric tons yearly for exportation. The credit will be used, among other things, to build a pier at Macapá on the Amazon river, and a railway linking the deposits and this port.

Manganese ore exports have declined because of the transportation situation caused by the inability of the Central do Brasil Railway to move all the production to the port of Rio de Janeiro. Most of the ore mined has been stockpiled at the mines.

The Orquima Indústrias Químicas Reunidas S.A. has been producing, since July 1949, cerium chloride, and other salts derived from monazite. The present plant has the capacity to produce 1,500 metric tons of rare-earth metals annually. Monazite treated by the company comes from Guarapari, Espirito Santo state, and is mined by Monazita e Ilmenita do Brasil Ltda.

Itabira Iron Ore Company's Exports from Brazilian Ports in Metric Tons from 1941 to September 1950

Year	Port of Rio de Janeiro	Port of Vitoria	Other Ports	Total
1941	315,734	91,917	13,105	420,756
1942	249,180	62,992	3,861	316,033
1943	259,725	63,072	.....	322,797
1944	79,254	126,543	.....	205,797
1945	198,367	101,626	.....	299,993
1946	23,440	40,973	.....	64,413
1947	20,776	175,961	.....	196,737
1948	214,037	385,252	.....	599,289
1949	203,663	471,910	.....	675,573
1950*	.....	529,385	.....	.....

*January to September only.

Another Company, Oxymetal, associate of Sociedade Itabapoana de Mineração has been producing cerium sulphate, which is exported to the French company, Monacerium.

CHILI

Area ..... **286,396 square miles**
Population **5,806,000**
Currency Unit ..... **Peso**
Value ..... **$0.05163 (Government)**

Chief Mineral Products: Copper, molybdenum, iron, nitrates, lead.

The Chilean copper industry passed through an eventful year that saw an improvement in both price and demand for copper, but all-out production was seriously hampered by labor disputes and unrest. The three major mines—American-owned interests—Chuquicamata, El Teniente, and Potrerillos of the Chile Exploration Company, Braden Copper Company, and Andes Copper Company, respectively, which account for 95 percent of the country's copper output, produced only 134,502 metric tons of refined copper the first five months of 1950, compared with 170,962 in the same period of 1949.

A strike took place in April at Chuquicamata, one of the world's largest single copper mining operations, an Anaconda Copper Company property. Located in the heart of the Atacama desert, some 150 miles from the city of Antofagasta, Chuquicamata suffered a serious curtailment in production because of this and other strikes during the year.

By the first of June, the three large American companies employed 14,390 persons, with 5,524 at Chuquicamata; 6,393 at El Teniente, a Kennecott Copper Company property; and 2,473 at Potrerillos. A total of 18,533 workers were employed by these companies in the same period of 1949.

The Bethlehem Steel Corporation's subsidiary, Bethlehem Iron Company, continued operation of its El Tofo openpit magnetite iron ore mine. Simultaneously it developed the Romeral iron ore deposit and built railroads from the mine to the port of Guayacan where a harbor is being built to facilitate iron ore exports to Sparrows Point, Maryland.

The $87,450,000 Huachipato steel mill near Concepcion was completed and placed in operation during 1950. It is second largest in South America. Iron ore comes from the El Tofo mine, and coal and limestone are produced locally.

COLOMBIA

Area ..... **439,830 square miles**
Population **11,015,000**
Currency Unit ..... **Peso**
Value ..... **$0.5102 (official)**

Chief Mineral Products: Gold, lead, silver, sulphur, zinc

Industrias Puracé, Colombia's only commercial sulphur producer, placed an order in the United States late in 1950 for a complete, modern, treatment plant which will raise production from a current monthly rate of 200 metric tons of high purity sulphur to 1,000 tons.

The new plant is expected to be installed and operating about the middle of 1951, and it will furnish about one quarter of the country's annual sulphur needs of approximately 50,000 tons.

The company's mining property, east of the town of Popayan, is at a height of 12,000 feet on the slopes of the active, though quiet, Volcano de Puracé, where sulfataras have deposited an estimated 12,000,000 tons of rock containing an average of 40 percent sulphur. The rock is presently hand-mined with picks and shovels, and one ton hourly is treated in a closed furnace retort having a 300-ton a month capacity. Power equipment for mining will replace picks and shovels.

Industrias Puracé distributes its bagged product by truck. Most of it is sold to sulphuric acid plants at Bogota and Medellin. Sugar refineries in Cauca Valley take 40 to 60 tons monthly, and small quantities are used by railroads for killing grass along the right of way.

In 1949 Puracé produced 800 metric tons of sulphur, compared to a 1950 production of about 2,400 tons.

The only zinc mine in operation in Colombia produced between 2,000 and 3,000 metric tons of ore containing 60 percent zinc. The 1949 production was about 528 tons.

The mine is some 60 miles northeast of Bogota, near Gacheta, Department of Cundinamarca. Operations began in 1949, and work is still carried on by hand, but plans call for early acquisition of a power shovel, crusher, and other modern equipment. Ore from this mine is exported to the United States.

Construction of the Paz de Rio steel mill by Empresa Siderurgica Nacional de Paz del Rio at Belencito, near Sogamoso in the Department of Boyaca got underway in July 1950.

Present plans are for construction of a hydroelectric plant, electric smelting furnace, and a rolling mill. Originally 193,530 metric tons of iron and steel products were to be produced by 1953. Revised plans call for 350 metric tons daily of ingots, with an annual output of 27,600 tons of barbed wire, 50,000 tons of structural steel and plates, and 13,000 tons of rails.

Financial arrangements were reported to have been completed for loans totaling $37,000,000 from French and German sources. These loans would seem to indicate procurement of European equipment for the plant, but 30 percent of the total sum may be used for purchases outside France and Germany. The total cost of the plant is estimated at $41,000,000.

NICARAGUA

Area ..... **57,144 square miles**
Population **1,053,000**
Currency Unit ..... **Cordoba**
Value ..... **$0.1418 (official)**

Chief Mineral Products: Gold, silver.

The Neptune Gold Mining Company at Bonanza was again the largest producer of gold in Nicaragua during 1950. Tonnage milled was 260,130; ore grade was 0.303 ounces gold and 0.432 ounces silver per ton. Underground development work replaced the ore mined during 1950 and a fairly active geologic and exploration program was carried out during the year.

Full-scale operation of the Constancia property was begun during the year. The seven-mile-long Constancia aerial tramway was completed in June 1949. During 1950, operating under full load conditions, the tramway operated successfully. At the mine the ore hoisted from the shaft is delivered by a storage battery locomotive and cars to the coarse crushing bin at the head tram terminal. The ore is crushed to minus-three-inches before loading into the 10.8-cubic-foot tram buckets.

The mine employs 1,100 men and Bonanza has a population of about 5,000 people. Therefore, since no food is grown locally, all material, supplies, and imported foods are handled by airplanes flying from Puerto Cabezas, 83 miles away. Freight is $52.00 per ton from Puerto Cabezas and $81.00 from Managua; the source of the major portion of local food and supplies.

The La Luz Mines, Ltd's., gold mines at Siuna, Nicaragua completed a three-year construction program which brought its mining and milling capacity to 1,900 tons per day. Costs per ton milled reached the lowest point in the history of the property. Appreciable quantities of new ore were added to reserves following a vigorous exploration and mine development program.

At Siuna underground exploration on the 500 foot level added 250,000 tons of average grade ore to the ore reserves. An intensive diamond drilling program in the footwall of the main orebody proved 1,250,000 tons of low-grade material which would be available for future operations on a larger scale. This low-grade material will be further explored from the new bottom level of the mine (750 feet) now under development, to ascertain if a caving method of mining will apply to the large area under consideration.

The underground mine expansion program was completed to raise the tonnage to 1,500 tons per day from 850 of last year. The crusher, ore passes, hoists and loading pocket were installed and greatly

Miners' safety and uninterrupted lead-zinc production are being assured at Combined Metals Reduction Company's Caselton mine, Pioche, Nevada, through use of Tiger Brand shaft-hoisting rope. Tailored for the job, this rope is constructed to best meet all conditions of loading, winding, corrosion, vibration.

Tiger Brand rope fights vibration, assures maximum fatigue life!

On any equipment...for any job you handle...rely on tough American Tiger Brand, the wire rope that's rigidly controlled by United States Steel from raw ore to finished product. To get all the stamina engineered into it, you're welcome to the services of a Field Specialist. For free consultation, contact your Tiger Brand distributor or write Columbia Steel Company, Room 1422, Russ Bldg., San Francisco 4.

USS

U·S·S TIGER BRAND Wire Rope

UNITED STATES STEEL

contributed to the lowest costs per ton in the history of the mine.

La Luz Mines has maintained a geological reconnaissance field party in northeastern Nicaragua throughout the past year. The party covered an area of 35 square miles outlining favorable mineral horizons in the Cretaceous sediments.

The mill increased its daily output to 1,900 tons per day at the year's end. Two recently installed washing plants handled the ore from the openpit and underground. The removal of mud and wet fines from the ore materially increased the capacity of the crushing section.

Excellent progress was made in construction of the hydroelectric power dam at a point 18 miles east of the mine. The gravity-type structure, which is 60 feet high by 700 feet long, will impound 85,000 acre-feet of water to feed, evenly, the installed 5,400 hp of turbines throughout the year.

The Compania Minera La India and Empresa Minera de Nicaragua, subsidiaries of Noranda Mines, Ltd. of Canada, continued operations during 1950. At the La India mine the long (two mile) drainage tunnel was connected to the main workings of the India vein during 1950, eliminating the need for pumping to keep the mine workings dry. The mill treated 93,465 tons of ore from which 27,000 ounces of gold and 31,611 ounces of silver were recovered. Ninety-three percent of the gold was recovered. A disastrous flood in October claimed 37 lives, among which was superintendent Harry V. Long. Fortunately the flood occurred on Sunday when no men were underground. Flood damage caused the loss of a month's mine production.

La India continued to explore the Golfo property and was also active in explorations both in Nicaragua and Honduras.

At the El Limon mine a new production record was made with 136,668 tons of ore milled. A total of 47,867 ounces of gold were recovered. Extensive development work at the Santa Pancha mine continued throughout the year. It is expected that the underground mine at Santa Pancha will be brought into production during 1951.

The Compania Minera de Jabali continued operation of the 300-year old gold mine during 1950. The 4,600-foot-long, 8 by 8 foot crosscut was completed to the Estrella vein in November. Total cost of driving this crosscut was $29.61 per foot. This cost figure covered the cost of all mechanized equipment including Ingersoll-Rand DA-30 automatic drifters, Eimco 12B RockerShovel, 20 Card Iron Works Company mine cars, etc.

In the mill a new Joshua Hendy ball mill and Dorr duplex classifier were installed. A total of 65,863 tons of 0.42 ounce gold ore was milled.

VENEZUELA

Area ..... 330,000 square miles
Population 4,595,000
Currency Unit ..... Bolivar
Value ..... $0.2985 (official)

Chief Mineral Products: Iron, gold, diamonds.

United States companies in Venezuela report rapid progress during 1950 in development of iron mining operations in the interior of the country.

Bethlehem Steel Company's subsidiary, the Iron Mines Company of Venezuela, at El Pao, some 300 miles from the coast, was scheduled to make its first shipment of iron ore to the United States early in 1951. At the beginning of 1950 Bethlehem's construction program was near completion. Facilities completed at Palua, Orinoco River port about 50 miles north of the mines, included ore storage areas, a traveling bridge and a cantilever loading bridge.

The company's deep water transfer station at Puerto de Hierro, near the mouth of the Orinoco River, was completed in May 1950. A standard gauge railway between the mines and Palua was put into service. Work in connection with leveling and ballasting of the railroad and installation of navigational sides of the Orinoco River continued throughout the year.

The first iron ore was shipped from the mine to Palua in July 1950 and from Palua to Puerto de Hierro in September. Mining operations at El Pao were still in the early stages late in the year. Compared with eventual shipments of 4,000 tons of ore daily from El Pao to Palua, about 1,000 tons daily were hauled in 1950. An average of 2,500,000 to 3,000,000 tons of ore annually will be exported after mining operations are fully underway. The El Pao mine is estimated to contain about 60,000,000 tons of 68 percent Fe.

United States Steel Company's Orinoco Mining Company was still carrying on exploratory and development work at the end of the year at its Cerro Bolivar property, some 50 miles southwest of El Pao. Mining operations at Cerro Bolivar are not expected to get underway for several years.

Dredging operations on the Orinoco River were in progress at the end of the year so that large ships will be able to navigate to a point 91 miles from the mine. A railroad will be constructed from the mine to this port.

In May 1950 the Venezuelan Development Corporation engaged a Canadian engineering firm to determine the economic and technical feasibility of establishing a steel plant in Venezuela. The Canadian firm's study, scheduled for completion within six months, will include an evaluation of the country's requirements for iron and steel, an estimate of both construction and operating costs, and recommendations as to plant facilities and plant site. A site has already been recommended at the confluence of the Orinoco and Caroni Rivers. In absence of suitable coking fuels in Venezuela the reduction of iron ore may be effected by use of natural gas.

Considerable progress was made in 1950 by the Venezuelan government-financed enterprise, C. A. Venezolana del Diamante, in its plans to undertake diamond mining with modern, mechanized, diamond mining equipment. At the beginning of the year a large part of scheduled, random, pitting operations and other development work had been completed.

Delivery was received of several tractors and an eight-foot gravity, diamond washing unit from the United States. Installation of the washer was completed in October and production on a major scale was started in December 1950.

The large quantity of diamonds mined in January and February 1950 resulted in a total of 36,373 carats for the first six months of 1950 compared with only 29,507 carats in the same period of 1949.

The nomadic free-digger population of the Icaburu district accounted for this increased 1950 output. They were attracted by rumors of the discovery of rich diamond deposits in the Urinam region of the State of Bolivar. The government took steps to evacuate them from this area in March, after which time the country's diamond output dropped below the monthly production levels of 1949.

This region is part of the government reserve zone. Venezuelan mining laws authorize the national executive to exclude from normal procedures of filing claims any minerals found within the country or in specified reserve zones.

Gold producers expected an increased output for 1950 over the 1949 production totaling 1,909,067 grams, but only 749,688 grams were produced the first six months of 1950. This was about 20 percent below that for the same period of 1949. Further developments indicated that the total 1950 output would not exceed 1949's.

Guayana Mines Ltd., which accounts for about 93 percent of the country's output, suspended operations in August 1950 as the result of a flood which occurred in one of the company's mines as machinery was being installed. Labor conditions, particularly in the matter of high-grading, and a weakened financial position were reported to have constituted some of the company's long-range problems. A special commission appointed by the government undertook to study the economic effects of the close-down in order to recommend emergency measures to aid the economy of El Callao district where activities of the Guayana Mines are concentrated.

During the year the government completed the installation of a cyanidation plant in the Callao district for treatment of gold produced by many small lode-gold miners in the area.

MEXICO

Area ..... 763,944 square miles
Population 25,567,000
Currency Unit ..... Peso
Value $0.1156

Chief Mineral Products: Lead, zinc, silver, copper, gold, antimony, graphite.

Mining improved considerably during the second half of 1950 due largely to the Korean war sharply changing the world picture and provoking increased demand abroad and at higher prices for lead, copper and zinc.

The Government's National Commission for Stimulating the Mining Industry reported important finds of manganese in Oaxaca as a result of prospecting activities. The Commission also discovered good silver-lead tracts in that State and adjoining Chiapas. Late in 1950, the government moved to stimulate steel pro-

duction by semi-official effort, backed by the Nacional Financiera, S.A., the administration's fiscal agency, and private enterprise. The plan is to develop important iron deposits in Vera Cruz, Oaxaca, Michoacan and Colima. Early in 1951, work started on a semi-official and private enterprise iron-steel plant at the port of Vera Cruz which the Nacional Financiera expects to be in operation by June. It will use iron mined in Vera Cruz and Oaxaca. The Commission, and the newer official mining aid organization, the National Institute for the Investigation of Natural Resources, moved to encourage "gambusinos" by allowing them comfortable credits for grubstakes, or even staking them to those essentials, as a means of boosting explorations that mining complains is imperative for the life of the industry, as long-worked tracts are being exhausted and but little private exploring can be done since only the very biggest companies can afford such costly experimenting.

The American Smelting and Refining Company arranging for the installation of a smelting plant, reportedly to cost $5,000,000, at its Avalos unit, Hidalgo del Parral, Chihuahua.

Mine Production of Metals in Mexico in 1949 and 1950 in Metric Tons

Metal	1949	1950[1]
Gold	12.6	13.0
Silver	1,538.2	1,500.0
Copper	57,246.0	60,000.0
Lead	220,764.0	250,000.0
Zinc	178,402.0	220,000.0
Iron	246,573.0	248,000.0

[1]Estimated

Gold production gained to offset a slight decrease in silver output, which did not alter Mexico's control of prices as the world's leading source of the latter metal. The Bank of Mexico continued to guarantee a minimum silver price of 80 cents (United States) an ounce for all domestic production.

Uranium deposits were officially reported to have been discovered in the State of Chihuahua and were being further investigated.

SURINAM

Area ..... **54,291 square miles**
Population **188,000**
Currency Unit ..... **Guilder**
Value **$0.2632**
Chief Mineral Products: Bauxite, gold.

A 40,000,000 guilder loan has been granted by Holland to Surinam to study agriculture and mining possibilities. Also, plans have been made to harness the waterpower of the Surinam river. A geological service, created some time ago, is continuing investigations and has surveyed a diamond find, the mother rock of which has not yet been found; has searched for several minerals generally found in pegmatites, which occur in many places; and has found high-grade bauxite deposits in the Nassau mountains. The Surinam Bauxite Company plans to invest 3,500,000 guilders in a new bauxite mine at Rorac and will transport the ore to Paramaribo by lighter. The other big producer of bauxite in Surinam, the Billiton Company, intends to raise production in view of the rising demand for bauxite in the United States.

COSTA RICA

Area ..... **19,258 square miles**
Population **794,000**
Currency Unit ..... **Colon**
Value ..... **$0.1764 (official)**
Chief Mineral Products: Gold, silver.

The Miramar Mine and Exploration Company, located in the Department of Puntarenas, was still the only producing gold mine in Costa Rica in 1950. The discovery of a new high-grade ore section on the property in the latter part of the year caused a sharp increase in production, and gives promise of a substantial future to the mine.

The Nacionel Minera, S. A., Eric C. Murray, president, has a placer property on the Peninsula de Osa on the southwest coast of Costa Rica and has been carrying on exploration work on the beach sands and contiguous inland areas for the past ten years. During that time they reportedly have proven 1,200,000 yards of pay gravel.

Outside of exploration equipment no heavy machinery has been brought into the property, pending a satisfactory contract with the Costa Rican Government for the exploration and exploitation of the area. Due to the lack of mining laws in the country covering placer properties, the company was not willing to make a large expenditure of capital until such a contract could be culminated.

The Government of Costa Rica has been cooperative in attempting to draw up a contract satisfactory to both parties, and to cover other prospective placer operations. A bill is now pending before the National Assembly under the terms of which Nacional Minera will be given the rights to explore some 15,000 acres of ground, on the Peninsula de Osa, during the next four years. At the end of that time they will be given a concession, covering such parts of that ground as they determine contains sufficient values to make a large scale operation profitable. The remainder of the 15,000 acres will then revert to the Government. As soon as this contract is approved, the Company intends to carry on a vigorous program of exploration and exploitation of this very promising district.

EL SALVADOR

Area ..... **13,176 square miles**
Population **2,150,000**
Currency Unit ..... **Colon**
Value **$0.40**
Chief Mineral Products: Gold, silver.

The El Dorado gold-silver mine of the New York and Honduras Rosario Mining Company was again the largest mine operation in El Salvador during 1950. Tonnage milled was 59,767, up from the 47,372 tons milled in 1949. Average grade of mill feed was 1.31 ounces silver and 0.2542 ounces gold per ton. Silver recovery was 59,598 ounces and gold recovery was 13,479 ounces. Additions to the milling plant, announced in the 1949 Yearbook, were completed during 1950. Mill capacity was increased from 150 to 300 tons per day. The company proposes to mill 7,000 tons of ore per month during 1951.

In the mine the main shaft was completed to the 1425 level during the year. The veins should be cut by work from this new level during the third quarter of 1951. A total of 3,515 feet of drifts, 1,599 feet of crosscut and 2,562 feet of winzes and raises were completed during 1950.

HONDURAS

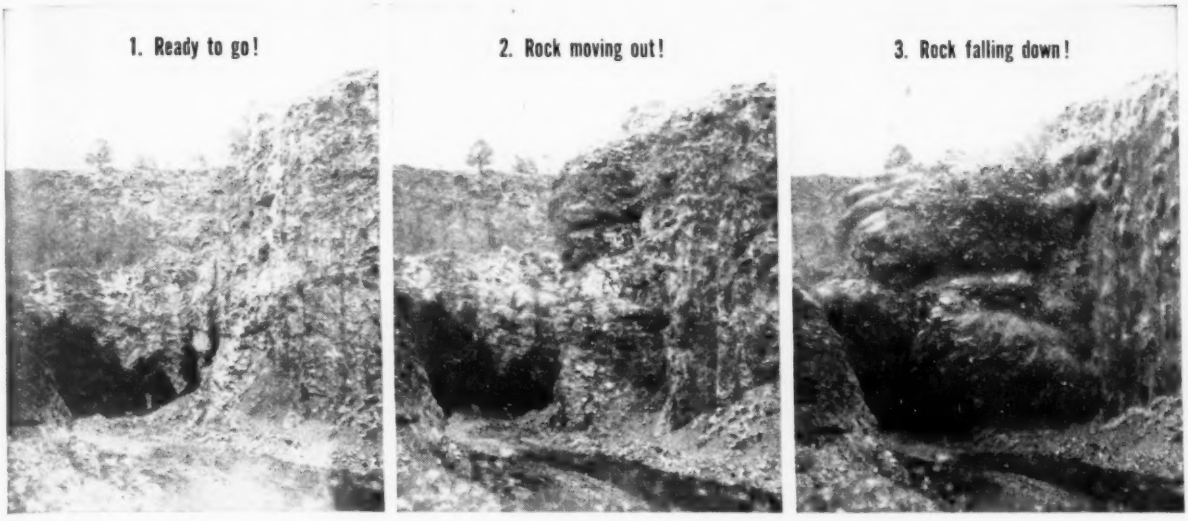
Area ..... **59,160 square miles**
Population **1,326,000**
Currency Unit ..... **Lempira**
Value **$0.50**
Chief Mineral Products: Gold, silver.

During 1950 the New York and Honduras Rosario Mining Company started an exploration program at its Rosario mine which will take 3½ years to complete. The program will explore the outer fringes of the Rosario property and will also include diamond drilling at depth. By the end of 1950 this program was well underway. Two new Caterpillar Diesel D-375 units were installed during the year. Exploration and development footage during the year was: drifts, 10,159; crosscuts, 7,904; raises and winzes, 3,898; and diamond drilling, 1,672. The mill treated 196,898 tons of ore averaging 13.045 ounces silver and 0.0885 ounces gold per ton. Silver output was 2,337,782 ounces and gold output was 16,182 ounces.

At Rosario's El Mochito mine the main shaft was continued to the 1650 level and the crosscut that was started from the shaft entered the main orebody during January 1951. Indications are that the ore on this new level will have a lower silver content and a higher lead and zinc content than on the upper levels. The mill treated 39,753 tons of 34.60 ounce silver, 0.02 ounce gold and 1.99 percent lead. Production was: 1,168,363 ounces of silver, 700 ounces of gold and 305 tons of lead. Underground development consisted of 3,515 feet of drifting and crosscutting; 2,342 feet of shafts, raises and crosscuts; and 2,925 feet of diamond drilling.

The New Idria Honduras Mining Company continued operation of its low-grade San Andres gold mine throughout 1950. A total of 81,757 dry tons of ore was milled from which bullion and concentrates valued at 1,007,298 lempiras were recovered. Overall recovery in the mill during the year was 90.5 percent. The company continued metallurgical experimental work during the year. Considerable progress in the solution of some of the problems in the charcoal circuit of the mill was made. Research is to con-

No Wasted Gases Spouting In This Shot!



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WE DIDN'T just "happen" to catch a picture of this blast at the right time! Actually, we got over 15 photos of this blast, using a special "machine-gun" camera. The photos here are spaced at ⅔ second intervals. They give positive proof that the ROCKMASTER split-second delay blasting system can give the kind of *blasting control* that blasters dream about.

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tinue directed toward the increasing of metal recoveries.

Underground development of the 1270 level, the lowest in the mine, was encouraging. The vein in the south heading showed widths of about 10 feet and it is very possible that a rather sizeable ore-body may be developed in that area.

PERU

Area ..... 482,258 square miles
Population 8,405,000
Currency Unit ..... Sol
Value $0.0650

Chief Mineral Products: Lead, zinc, copper, bismuth, gold, silver.

The American Smelting and Refining Company's subsidiary, Northern Peru Mining and Smelting Company, continued exploration and development of the Torquelala and Quellaveco large, low-grade copper deposits. The Compania Minera Atacocha, S. A. placed its enlarged 350-ton-per-day mill in operation and made equipment additions at the mine. A new manganese mining operation was started in the Department of Puno. Operations progressed satisfactorily during the year despite difficulties inherent in opening a new mine at an elevation of 15,500 feet. The first shipment of ore, 750 tons, was made from the port of Matarani to the United States and contained over 58 percent manganese. Increased interest in at least three deposits of high grade, low impurity, hematite iron ore was evidenced during the year due to the stepped up steel programs of all countries. The deposits, while not at tide water, are not far distant from existing railroads.

The Cerro de Pasco Copper Corporation continued to operate its mines, mills and smelters at capacity. Additional equipment and plant expansion was continued. Zinc will be of increasing importance, as the corporation plans erection of an electrolytic zinc refinery at the smelting town of La Oroya.

ECUADOR

The South American Development Company was not operating gold mines in Ecuador during 1950 because of high taxes and the exhaustion of ores at Portevalo. What little gold production there was during the year resulted almost 100 percent from placer mining operations by individuals.

During the year the Production Development Institute of the Ecuadorian government announced plans to proceed with construction of another cement plant in the Sierra region. The plant would be producing within two years. A tentative budget allocated $394,000 for machinery in general, $70,000 for a plant building, $110,000 for motors, $30,000 for oven bricks, $40,000 for silos, and $198,800 for other equipment.

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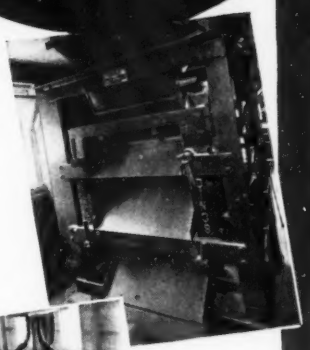
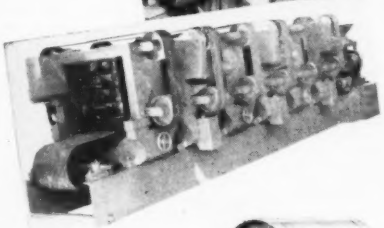
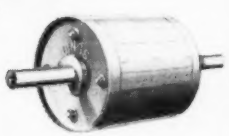


(Right) Induced Roll Separator purifying sand.

Battery of Crockett Separators concentrating magnetite. (Left)

Magnetic Detector signals presence of tramp iron. (Right)





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BALL & ROD MILLS: For information concerning the Marcy line of open-end ball and rod mills manufactured by Mine & Smelter Supply Co. (MASSCO), circle 2.

FLOTATION INDEX: The 1951 edition of Dow Chemical Co.'s Flotation Index, a complete guide to published material on flotation, is a must for mill men. Get your copy by circling No. 4.

THREE-PRODUCT HMS SEPARATION: The Akins separator is the heart of Colorado Iron Works Co.'s new HMS unit that produces concentrate, middling, and tailing in a single-stage operation. Get free information on the new unit by circling 5.

TRICONE MILLS: A catalog describing the operating principle of the Hardinge Company tricone mill, including a discussion of ball segregation, design features and performance data, has been released. Circle No. 11 for your bulletin, AH-414.

AUTOMATIC CAR COUPLER: The Willison automatic car coupler, manufactured by National Malleable Steel Castings Co., couples two haulage cars on contact, uncouples simply from a safe position, and eliminates slack between cars. For further information, circle No. 19.

DORRCO FLUOSOLIDS SYSTEM: Applications to roasting of refractory gold ore concentrates, copper and zinc concentrates, pyrite. Literature available from MINING WORLD, or from Dorr Co., Stamford, Conn. Circle No. 27.

MINERAL DRESSING NOTES: New booklets by American Cyanamid, 30 Rockefeller Plaza, N.Y.C., or from MINING WORLD, covering Applications of Cyanamid Reagents, Dutch State Mines Cyclone Separation, Heavy Media Separation Techniques. Circle No. 28.

IMPROVED FLOTATION: Increasing recoveries and reducing reagent and power consumption with the improved Fagergren machine. Literature from Western Machinery Co., San Francisco, or from MINING WORLD by circling PEP No. 29.

TRACKMOUNTED JUMBOS: Features of Gardner-Denver Hydraulic Drill Jumbos offer faster set-up, creep-free booms, hydraulic roof jacks, up to 10-foot steel changes for more efficient use of tungsten carbide bits. Write for complete information to Gardner-Denver Co., Quincy, Illinois, or circle No. 30 on the MINING WORLD PEP card.

MINING MACHINERY: A new 28-page two-color bulletin describes the complete line of machinery manufactured by Nordberg Manufacturing Co., Milwaukee 7, Wis. Miners and mill men will get valuable information by reviewing this line of Diesel engines. Symons Cone Crushers and Screens, mine hoists, grinding mills, and railroad equipment. Circle No. 39.

SPIRAL CONCENTRATOR: The paper presented at the International Conference on Coal Preparation in Paris, "The Humphreys Spiral Concentrator for Cleaning Minus-¼-inch Coal," is made available to you by the Humphreys Investment Company. Get this 8-page bulletin by circling No. 40 on the MINING WORLD PEP card.

CRAWLER TRACTORS: Newly released folders which outline the increased horsepower ratings of three International Crawler tractors are available from MINING WORLD. For TD-24, circle 51; for TD-18A, circle 52; for TD-14A, circle 53.

WARD-LEONARD UNIT: A new bulletin, just released by Marion Power Shovel Company, outlines design and operating features of the fast-starting 93-M Ward-Leonard unit that is used for all major operations on Marion Electric Shovels. Bulletin "Marion 401," on the 93-M and its new compact 600 motors, is yours by circling 54.

VIBRATING SCREEN: Link-Belt "CA" Concentric Action Vibrating Screens, in sizes from 3x8′ to 6x16′ in single-, double-, or triple-deck models for a variety of sizing, rinsing, and dewatering uses, are described in new 12-page "Link-Belt Book No. 2354." Circle 55.

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MATERIALS HANDLING EQUIPMENT: Engineering of conveyor and bulk handling equipment for mines. Literature available from Stephens-Adamson Mfg. Co., Aurora, Illinois, or circling 76.

ROASTING, CALCINING and DRYING METHODS: Pacific Multiple Hearth Furnace and its application to a variety of metallic ores and minerals. Literature. Circle 77.

CURVED JAW CRUSHER PLATES: Traylor curved crushing surfaces cut costs, improve crusher operation and outlast straight plates as much as 3 to 1. Further data obtainable by circling 78.

REVERSE FEED STOPERS: New compact Thor drills ranging from compact Model 200 to heavy-weight 600 offer simplified design, air cushioning, extra bearing surfaces and other features to sharply reduce out-of-service repair time. For complete literature or on-job demonstrations, write to Independent Pneumatic Tool Co., Aurora, Illinois, circle 79.

SMELTERS: Mace Company furnaces, in sizes from 5 to 250 tons, are described in complete information just released. Mace offers working-scale tests on ton or larger lots in the proper size of furnace or sintering hearth for your job. For complete information, circle 81.

JAW CRUSHER: Straub Mfg. Co.'s bulletin 605 describes and illustrates the Kue-Ken double-action jaw crusher. For complete and free information, circle 82.

MINE CARS: Pressed Steel Car Company, Inc., which has manufactured track haulage equipment for the mining industry for 50 years, carries a complete line of underground track haulage units: U-body mining tubs, three-way dump cars, Granby type cars, two side discharge cars, track parts, and car parts. For contact information on this line of products, circle 92.

DIAMOND DRILLS: For complete information on Christensen Diamond Products Co.'s line of core bits, concave bits, and reaming shells in all standard diamond-drill sizes, circle 95.

PLACER MINING: For information on Bodinson Mfg. Co. dragline dredges and dry bank plants for placer operations, get Bodinson's new illustrated catalog of services and equipment by circling 97.

ELECTRIC SMELTING AND REFINING: Furnace applications for matte and speiss smelting, calcium carbide, nonmetallic melting, ferroalloys, nonferrous refining and specialized applications. Write on company letterhead for complete book to MINING WORLD, or to Pittsburgh Lectromelt Furnace Corp., 324 32nd St., Pittsburgh, Pa.

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Please send me complete and free information on the following equipment described in your PEP section, and keyed by the numbers I have circled:

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CIRCLE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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YOU	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
DESIRE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

Also send further free information on the equipment advertised on page:

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ELECTRIC SHOVELS: Bucyrus-Erie Co. electric shovels, equipped with Ward-Leonard electric control, are built for heavy-duty loading. For contact information, circle 3.

AMALGAMATOR: The Titan Amalgamator, manufactured by Mill & Mine Supply, Inc. is a simple, economical rotary unit for amalgamation to recover free gold. For full details, circle 7.

CYANIDATION: American Cyanamid Company announces its most recent technical publication, "Mineral Dressing Notes," Number 17, entitled "Chemistry of Cyanidation." This new issue in their series of technical publications is organized in four sections: Fundamentals of Cyanidation, Zinc in Cyanidation, Copper in Cyanidation and Iron in Cyanidation. Circle No. 9 for your free copy.

ROTATING EQUIPMENT: A new 24-page booklet contains a series of articles written by Fraser Jeffrey, assistant to Allis-Chalmers' chief electrical engineer, who authoritatively describes preventive maintenance and machine repair of electrical machines. Copies of "Care of AC Rotating Equipment," O5R7417, are available. Circle No. 12 on PEP card and get yours.

CONCENTRATOR: The Weinig Concentrator effecting a gravity separation in size ranges from ¼-inch to 35 mesh (between flotation and sink-float ranges), is described in Colorado Iron Works Bulletin No. 50. Circle No. 13.

FLOTATION REAGENTS: Armour and Company, Chemical Division, provides consulting service in flotation problems. For more information on Armour's flotation service, line of flotation reagents and the mineral separations these reagents will effect, circle No. 17.

DUST COLLECTION SYSTEMS: Complete literature from Northern Blower Co., Cleveland, Ohio, on methods of dust collection and cooling is yours by circling No. 31.

ROCK BIT ENGINEERING SERVICE: Free booklet on multi-use, carbide insert or one-use "Spiralock" bits available from Rock Bit Div., Timken Roller Bearing Co., Canton Ohio, or by circling PEP No. 33.

SAND PUMPS: For complete literature on a line of sand pumps specifically designed for pumping sands and slurries in mines, mills, and smelters, write to Allen Sherman-Hoff Co., 223 S. 15th St., Philadelphia 2, Pa., or circle No. 36 on the PEP card.

TRACTOR ATTACHMENT: A new 16-page catalog describes and illustrates the systems for using the improved Hystaway Excavator-Crane on your Caterpillar D6, D7, or D8 track tractor. For information that will tell you how to convert your "Cat" to a combination shovel, dragline, crane, backhoe, and clamshell, circle No. 43 on the PEP card.

BIG TRACK TRACTOR: Allis-Chalmers' new HD-20, a 41,800-pound tractor driven by the new 2-cycle GM 6-110 Diesel through a 3-stage torque converter, is further described in "Information HD-20." Circle 44.

CLAMSHELL BUCKETS: Haiss Clamshell Buckets, in a variety of six designs for different jobs, in sizes from ¼ to 3 yards, are described and specified in a new 8-page two-color booklet. Bulletin No. "Haiss 850," concerning these Haiss multi-sheave and power-wheel buckets will be sent to diggers who circle No. 47 on the PEP postcard.

PORTABLE AIR COMPRESSOR: Worthington's 105-cfm portable air compressor, available in gas or Diesel models for prospecting and light surface duty, has been redesigned for greater economy, improved performance, and lighter weight. For further information on this improved Blue Brute, circle 56.

SINGLE-DRUM HOISTS: Joy Manufacturing Company's new 16-page bulletin describes the complete line of Joy single-drum hoists for mining and surface work. Bulletin "Joy 76-X," with complete descriptions and specifications of hoists from 500 to 3500 pounds is driven by Turbinair, Pistonair, electric, or gasoline engines. Circle 58.

BLASTING CAPS: For complete information concerning Du Pont "MS" delay blasting caps in 14 clearly marked delay periods from 25 to 500 milliseconds, circle No. 11.

TRACTOR: A newly issued 32-page booklet describes and gives complete specifications for virtually every part of the Caterpillar D7 tractor. Get your free copy of Caterpillar Tractor Company's "Form 12678" by circling 64.

RADIATION SURVEY INSTRUMENT: A new product of El-Tronics specifically designed for portable and field use in measuring radiation intensities (Beta or Gamma) from all radioactive elements where a source of AC power is not available. Circle 65.

PYLON HOSE: Pioneer Rubber Mills' Pylon hose has a single nylon braid, is constructed from oil and chemical resisting synthetic rubber, works at 800 psi, but has a minimum bursting pressure of 3000 psi. For information on this improved hose, circle No. 69.

CONVEYOR BELT IDLERS: Catalog No. 785, published by Jeffrey Manufacturing Co., gives complete information on varied line of belt idlers, self-aligning, pivoted-type return, and many others. For your copy of this informative work, circle PEP No. 70.

"SLUSHMASTER SCRAPERS": Newly designed Pacific scraper reduces wear, increases load, with simplified assembly and parts replacement. For complete brochure, circle 71.

FLOATER BEARINGS FOR ORE CAR WHEELS: Special Sanford-Day design reduces maintenance costs and guarantees against bearing failure for five years. For complete literature, circle 72.

SLURRY PUMP: In Morris Machine Works' Type R centrifugal slurry pump, the stuffing box is under suction pressure only, a design which "minimizes entrance of grit into the stuffing box, with negligible dilution of slurry, and requires only nominal sealing water pressure." For Bulletin 181, circle No. 36.

IMPROVED SECONDARY CRUSHER: New Telsmith Gyrasphere offers new advancements in crusher design and operation. Circle 73 for bulletin Tels-274.

HARD SURFACING METHODS: Information on increasing life and reducing wear on rolls and crusher parts obtainable by writing Resisto-Loy Co., Grand Rapids 7, Michigan, or circle 80.

SLURRY & FROTH PUMP: Nagle Pumps, Inc. has released catalog 4906, which details, describes and explains the SW-OB froth and slurry pump for mill and mine use: Corrosion resistant, abrasion resistant, with no stuffing boxes and no submerged bearings. Circle 83.

REAGENT FEEDER: The Clarkson reagent feeder, a compact unit for metering from 2 drops to 2 liters per minute of reagent solutions or stable suspensions to flotation, milling, hydrometallurgical, and chemical circuits, is available in two models, model E in stainless steel for normal use—circle 84, and model F in Teflon plastic for extreme corrosion resistance—circle 85.

COMPLETE MINE PUMPING SYSTEM: Barrett, Haentjens & Co. offer a complete mine-pumping system which includes Hazleton multi-stage centrifugals, and automatic control system. Features of the system are control by either water-level or time clock, absolute priming, alarm in event of failure, equipment protection in event of failure, and elimination of attendants. Circle 87.

MINE & SURFACE CARS: Bulletin D-56 released by Differential Steel Car Co. explains how Differential Air Dump cars, dumping completely to either side by air power, can pay for themselves in the unloading of 400 to 500 carloads. Circle 88.

MILL, MINE, PLANT CONSTRUCTION: For information on Stearns-Roger Mfg. Co.'s complete engineering, designing, manufacturing, and construction facilities, circle 89.

WIRE ROPE: Contact information to straighten out your wire rope problems is available from Bethlehem Pacific Coast Steel Corporation. Circle 90.

MINE POWER CABLE: Anaconda butyl-insulated high voltage cable with a neoprene jacket provides "greater mechanical and electrical protection, unequalled protection from impact, crushing, twisting, abrasion," acid, oil, and heat resistance. Circle 91.

WOOD TANKS: Wood tanks for water, corrosive reagents, and storage of a variety of materials, cooling towers, pipe and ducts, zinc boxes, and other uses are predesigned and portable. For your copy of Pacific Wood Tank Corp. catalog 48, circle 93.

HORIZONTAL AUGER DRILL: Drilling horizontal holes 4, 6, or 8" in diameter, the McCarthy self-propelled drill often drills 1000 to 1500' per day in shale, sandrock, and soft limestone. For a complete story on Salem Tool Co.'s McCarthy drills and a list of users, circle 94.

DIAMOND DRILLS: For complete information on Christensen Diamond Products Co.'s line of core bits, concave bits, and reaming shells in all standard diamond-drill sizes, circle 95.

SINGLE USE BITS: For information on low-cost, time-tested, single-use Liddicoat bits, in a variety of sizes that are color coded for size, circle 98.

TIMBER PRESERVATIVES: For your copy of Osmose Wood Preserving Co. of America, Inc.'s new 16-page book that shows and tells all about Osmosalt treatment of wood and timber to prevent rot, circle 99.

FEDERAL MINING AGENCIES

IN 1950, U. S. GEOLOGICAL SURVEY EMPHASIZED STUDIES OF DEFENSE-MINERAL RESOURCES

By HERBERT B. NICHOLS
Information Officer
U. S. Geological Survey

As one of the principal fact-finding agencies of the Federal Government the Geological Survey is charged with geologic mapping; preparing the National Topographic Atlas; classifying public lands; and determining the Nation's reserves of water, minerals and metals. All these activities are vital if the United States is to prevent waste and avoid unsound planning.

The present emergency has caused a shift from activities important chiefly in peacetime development to those required in our national defense, such as new demands for specific knowledge pertaining to the country's potential resources.

Conservation Division

The Conservation Division's major functions are: (1) to examine and classify the public lands with respect to mineral and water-power resources; and (2) to enforce the mineral leasing laws. Vital supplies of hydrocarbons, phosphates, potassium compounds, sodium compounds, lead, zinc and vanadium are obtained from lands under Federal or Indian lease.

The Mining Branch, one of four Branches of the Conservation Division, is a regulatory and supervisory body responsible for the proper conduct of mine operations, including prospecting, development and production of coal, potassium, phosphate, sodium, silica sand, oil shale, and sulphur on public land leases; of gold, silver, mercury, vanadium, and quartz on various land grants; and of all minerals, except oil and gas, on segregated, restricted, and allotted Indian and acquired land leases. The Branch also enforces the operating and safety regulations under the various mineral leasing acts pertaining to Federal and Indian lands in the United States and Alaska.

In the exercise of its supervisory functions the Mining Branch enforces the terms of leases and permits, and applicable operating regulations: determines the amount of production and the royalty liability of the lessee; conducts investigations to avoid waste and improve mining and milling practices; makes recommendations on lease terms; and takes such action as is necessary in the public interest.

At year's end December 31, 1950, there were 1,348 properties under supervision in 28 states and Alaska, whose yearly output had a value in excess of $89,000,000. Supervision of the leases is effected through seven regional and district offices. The tonnage of products mined from supervised properties during 1950 is shown in the tabulation below:

Product	Tonnage Mined 1950
Coal	7,677,553
Potash	4,422,892
Phosphate	514,370
Sodium	491,751
Lead & Zinc Conc.	63,120
Miscellaneous	504,864
Total	13,674,550

Geologic Division

The Geologic Division is concerned with geologic investigations and appraisals of minerals and mineral fuels in the Continental United States, in Alaska, and in foreign countries.

In the Continental United States 92 projects covering 35 metallic and nonmetallic mineral commodities in 33 states were in progress in 1950, and well over half of these were focused on strategic minerals. At the end of the year, cooperation was in progress with the Defense Mineral Administration pertaining to the geologic evaluation of mineral properties being considered for governmental aid.

Mineral resource appraisals of graphite, copper, talc, and mercury were in progress as well as resource evaluations of individual mining districts. The geochemical prospecting unit continued its development of new techniques; and rapid tests for molybdenum, tungsten, cobalt, and silver were developed. Drilling and trenching were done in 14 districts on 13 mineral commodities. The mapping of the oil shales of northwestern Colorado was continued.

The Alaskan investigations involved coal, petroleum, raw materials for construction purposes, some metal-bearing districts, and one reconnaissance investigation of a previously unmapped area. Geologic work in several foreign countries is being carried on in cooperation with the respective foreign Governments involved.

Geologic investigations were continued in areas where proposed engineering developments will be benefited by geologic maps. Chief among these areas were Massachusetts and Rhode Island, the Missouri River Basin, Washington, Arizona, and Puerto Rico. Geologic studies of sedimentation, erosion and soil development in the Appalachian Mountains, and of volcanic activity in the western states, Alaska, and Hawaii were also made.

The Geological Survey's geophysical program supplemented the field investigations, and included about 25,400 miles of aeromagnetic and 10,500 miles of airborne-radiation surveys as well as ground magnetic, electrical, geothermal, and seismic investigations.

Geologic field investigations require laboratory studies and research in geochemistry, petrology, and paleontology. More than 30,000 samples of rocks were analyzed, and studies on physical-chemical processes and the paragenesis of minerals were continued.

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Topographic Division

This Division is responsible for maintaining the basic terrain inventory of the United States and its possessions—the National Topographic Survey—which now covers approximately half of the United States. However, much of this total was accomplished years ago and is in need of revision or resurvey. Considering the nation as a whole, less than 25 percent can be considered adequately mapped for today's mining needs, other industrial uses, and national defense. Mapping operations of approximately 3,300 quadrangles extended throughout the 48 states, Alaska, and Hawaii. Approximately 55,000 square miles were covered, while contracts were awarded for 58,000 square miles of aerial photography, and control surveys were extended over 159,000 square miles. Mapping was completed for nearly a fourth of the Missouri River Basin area and for part of Alaska.

Map Information Office

This office is maintained in the Geological Survey as a central source of information on mapping activities of all agencies, their aerial photos, mosaics and geodetic control. Service is available to the public as well as to the government.

Survey Publication

Once every five years a new edition of the "Publications of the Geological Survey" is issued. This index together with yearly supplements will be sent gratis to persons addressing requests to The Director, U. S. Geological Survey, Washington 25, D. C. The annual reports listed therein, together with monographs, professional papers, bulletins, water-supply papers, and chapters and volumes of Mineral Resources of the United States that are still available, can be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

The geologic folios, maps and charts are sold by the Survey. Remittance for these publications should be addressed to The Director.

All published topographic maps are sold and distributed also by the Survey, mostly at 20 cents a copy. Maps of areas west of the Mississippi River are sold and distributed by the Survey from its office in Denver, Colorado, as well as from Washington. Index maps of each state showing the quadrangles already published, will be sent free on request to The Director, U.S. Geological Survey, Washington 25, D. C.

In 1950, U. S. Bureau of Mines Worked to Expand U. S. Defense-Mineral Supplies

By ALLAN SHERMAN
Chief,
Office of Minerals Reports

The Bureau of Mines, U. S. Department of the Interior, reached its 40th birthday last year under the shadow of growing international tension that increasingly affected its activities. During the year, emphasizing strategic metals and minerals, it sought to increase reserves of ferrous alloys and nonferrous metals by exploration and metallurgical research, and worked to develop plentiful supplies of nonmetallic minerals and mineral fuels. The Bureau also pushed its efforts to promote safety and health in the mineral industries. It responded to an increasing number of calls for technical, statistical, and economic data from the National Defense Establishment and other agencies concerned with national security.

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REGION II, NORTHWESTERN
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Regional Director: Stephen M. Shelton, Box 492, Albany, Oregon.

REGION III, SOUTHWESTERN
California, Nevada
Regional Director: Harold C. Miller; 1415 Appraisers Building, San Francisco 11, California.

REGION IV, ROCKY MOUNTAIN
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Regional Director: John H. East, Jr.; 224 New Customhouse, Denver 2, Colorado.

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Iowa, Michigan, Minnesota, Nebraska, North Dakota, South Dakota, Wisconsin
Regional Director: Paul Zinner; 2908 Colfax Avenue South, Minneapolis 8, Minnesota.

REGION VI, SOUTH CENTRAL
Arkansas, Kansas, Louisiana, Oklahoma, Texas, Missouri except the Coal-to-Oil Demonstration Plant at Louisiana, Missouri.
Regional Director: Clifford W. Seibel; Rooms 511-16, Barfield Building, Amarillo, Texas.
This region also has jurisdiction over the Navajo Helium Plant near Shiprock, New Mexico, and all pipe lines and other facilities connected with or serving those properties.

REGION VII, SOUTHEASTERN
Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee.
Regional Director: Hewitt Wilson; Box 217, Norris, Tennessee.

REGION VIII, NORTHEASTERN
Connecticut, Delaware, Illinois, Indiana, Kentucky, Maine, Massachusetts, Maryland, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, Virginia, West Virginia, and the Coal-to-Oil Demonstration Plant at Louisiana, Missouri.
Regional Director: Harold P. Greenwald; 4800 Forbes Street, Pittsburgh 13, Pennsylvania.

Region IX, Foreign Minerals
Acting Regional Director: Elmer W. Pehrson; Interior Building, Washington 25, D. C.

Metals and Nonmetallics

Efforts to expand domestic resources of manganese, chromium, and tungsten, as well as of copper, lead, zinc, beryl and mica, together with progress toward developing practicable methods of synthesizing mica and asbestos, and increasing pilot-plant production of new corrosion-resistant metals, titanium and zirconium, high-lighted the year's work on metals and minerals other than fuels. Manganese deposits in Maine, Minnesota, Arkansas, Montana, and Arizona were explored and development of the one at Artillery Peak, Ariz., was begun. The Bureau continued to cooperate with the Iron and Steel Institute in seeking a method of recovering manganese from open-hearth slags. It pushed studies aimed at low-cost recovery of lead and zinc from oxidized ores and at improved techniques of recovering nonferrous metals from scrap and metals from drosses and other metallurgical wastes. It also sought methods for utilizing large deposits of silicious bauxite for aluminum production. It continued fundamental research and laboratory work demonstrating the feasibility of producing lightweight aggregates from various natural deposits as well as from industrial wastes. Scientific research in the field of rock mechanics and the measurement and correlation of thermodynamic properties of metallurgical substances were continued. The driving of the Leadville drainage tunnel was resumed.

Fuels and Explosives

The Bureau opened and dedicated the Anthracite Research Laboratory at Schuylkill Haven, Pa., during the year, and the Lignite Research Laboratory at Grand Forks, N. Dak., neared completion. Laboratory research, coupled with pilot- and demonstration-plant operations, looked toward the future economic and technical feasibility of producing liquid fuels synthetically on a commercial scale from coal and oil shale. To meet increasing demands, the Bureau stepped up production of helium to 63,311,003 cubic feet—17 percent above 1949.

During the year, the Bureau made about 1,680 tests of permissible explo-

(Continued on Page 116)

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L. E. Raymond • Ed. Eisenhauer, Jr.
L. C. Penhoet
Assayers • Chemists • Metallurgists
Ore Tests • Plants Designed
Specialty, Improvement of Plant Recovery & Efficiency

EL PASO TESTING LABORATORIES
Umpire Assayers—Chemists—Metallurgists
Shippers' Representatives
At:
El Paso Smelter—Phelps Dodge Refinery
For Ores and Scrap Metals
P. O. Box 1565, El Paso, Texas

GOODALL BROTHERS
ASSAYERS AND CHEMISTS
SHIPPERS' REPRESENTATIVES
Established 1909
Helena Montana

HANKS, INC., ABBOT A.
ASSAYERS AND CHEMISTS
Supervision of Sampling at Smelters
Spectrographic Analysis
624 Sacramento St. San Francisco 11

HAWLEY & HAWLEY
W. E. HAWLEY, Mgr.
Assayers, Chemists, Ore Buyers
Shippers' Representative
P. O. Box 1060 Douglas, Arizona

HERMAN, JOHN
ASSAYER AND CHEMIST
Qualitative Spectrographic Analysis
I Do Not Guarantee Satisfaction
I Guarantee Accuracy
920 Santee St. Los Angeles 15, Calif.

New Mexico
MINERALS LABORATORY
A. K. Veeder, Mgr.
Control and Umpire Assayers
Shippers' Representatives
1303 Grant Street Silver City, N. M.

ROOT & SIMPSON, INC.
Metallurgical Chemists and Assayers
P. O. Box 2069 Denver 1, Colo.
Established 1902

PRODUCTS AND SUPPLIES:

DRILLING COMPANIES:

Bureau of Mines

(Continued from Page 112)

sives, special explosives, and hazardous chemicals. It broadened its investigation of simultaneous and millisecond-delay multiple blasting of coal to include study of the vibrations of mine roof.

Safety and Health

Last year the Bureau continued its time-tested attack upon the problems of mine and plant safety through research, educational activities, and coal-mine inspections. Research on roof-bolting was expanded in an effort to learn more about the basic physics involved. During the year 12,580 men completed the coal-mine accident-prevention course for miners and 5,330 the course for supervisors. Similar courses were given to metal miners and to workers in the petroleum and natural-gas industries. First-aid and mine-rescue training was given to 32,734 employees in the mining and allied industries.

Bureau of Mines coal-mine inspectors examined 5,674 coal mines for a total of 8,183 inspections and completed the eighth full year of the coal-mine inspection program. The downward trend in coal-mine fatalities continued to a record low of 1.16 fatalities per million tons; 1950 was the second calendar year in the statistical history of American coal mining unmarked by a major disaster.

The Bureau intensified its research on air pollution, and during the year provided the chairman for the first United States Technical Conference on Air Pollution, authorized by the President in December, 1949, and held in Washington in May, 1950.

DIRECTORY

OF

ACTIVE MINING OPERATIONS

ALASKA

To provide the greatest possible utility, this list of American mining properties is presented alphabetically by states. Listings are made under the name of the operating company, the mine or the individual operator, depending upon the name under which the property is operated or commonly known.

Totally inactive properties offering no indication of an early resumption of operation have been deleted.

The list was compiled after a careful survey of some 6,000 mines and prospects, both active and dormant, in the United States and Alaska. Questionnaire forms covering major operating details and personnel were mailed over a period of three months. Where information supplied by the operator or owner was not complete, supplementary data were obtained from MINING WORLD field reports compiled by staff members in the course of nearly a half-million miles of mine-to-mine travel during the past few years and from records furnished by federal and state mining agencies.

Of the listings shown here, over 75 percent were compiled from returns of the original questionnaire.

While MINING WORLD cannot guarantee 100 percent accuracy of this directory, it believes the list is the best obtainable from any source.

A & S MINING CO
Fairbanks
MINE on Crevice Creek, Koyukuk dist

ADAMIK MARTIN
Coal Creek
BOULDER ASSOCIATION on Boulder Creek, trib to Coal Creek, hydraulic, stream gravel, Au

ADMIRALTY-ALASKA GOLD MINING CO
Box 529, Juneau
Pres: Henry Naden
VP: L P Dawes
Gen mgr & mine supt: W S Pekovich
MINE at Funter, underground, Au, Ag, Cu, Ni, Co
Norm C Steris, cons engr
100-TON GRAV-FLOT MILL
G W Powel, mill supt, met, assy
Under dev

ALASKA EMPIRE GOLD MINING CO
Box 529, Juneau
Pres: Norman C Stines
Dir & VP: Dr L P Dawes
Dir: V B Wallder
VP, gen mgr & mine supt: W S Pekovich
MINE at Hawk Inlet, underground, Au, Ag
100-TON GRAV-FLOT MILL
G W Powel, met
Under dev

ALASKA EXPLORATION & MINING CO, LTD
Box 136, Pullman, Wash
Pres: W C Moys
Secy-treas: J E McCoy
Mike A Trepte, Mgr
BIRD CREEK MINE near Talkeetna, placer, hydraulic, Au
TIMBERLINE MINE near Cantwell, Au
Under dev

ALASKA GOLD MOUNTAIN MINES, LTD
714 Garfield Bldg, Los Angeles, Calif
Pres: Charles F Hutchins
MINE at Ketchikan, Au, Ag
30-TON BALL MILL

ALASKA JUNEAU GOLD MINING CO
1002 Crocker Bldg, San Francisco, Calif
Pres: C A Norris
Secy: D L Feathers
MINE at Juneau, underground Au, Ag, Pb
14,000-TON GRAV-FLOT MILL
J A Williams, gen mgr
E G Nelson, asst gen mgr
H W Coke, met
Operations suspended

ALASKA LUCKY STRIKE, INC
Cordova
Pres, gen mgr, purch agt: W H Chase
Secy: I D Bogart
16 full claims in McKinley Lake dist, 22 mi E of Cordova, underground
50-TON GRAV MILL, Kennedy Ball
SMELTER
Assessment work

ALASKA PACIFIC CONSOLIDATED MINING CO
809 Colman Bldg, Seattle 4, Wash
Pres: V A Montgomery
Secy-treas: E W Wardin
INDEPENDENCE MINE, Wasilla, underground, Au, Ag
W M Stoll, mine mgr & engr
100-TON BALL MILL
200 tons daily prod

ALASKA PLACER CO
329 Colman Bldg, Seattle 4, Wash
Pres & gen mgr: Ralph Lomen
VP: Carl J Lomen
Secy-treas: E P Wood
PLACER MINE on Niukluk River, Au
9a-ft dredge
Chas Gustafson, mine supt

ALDER CREEK MINING CO
Box 1999, Fairbanks
Part: M E Sather
Mgr: J P Drables
PLACER MINE on Fairbanks Creek, hydraulic, Au

ALLUVIAL GOLDS, INC
4556 University Way, Seattle, Wash
Pres & gen mgr: Ernest N Patty
Dir: Walter Seligman
Dir: E D Bull
Dir: Mrs A D McRae
MINE on Woodchopper Creek, via Fairbanks, Coal Creek, P O Alaska, 4-ft dredge, Au

AMERICAN CREEK EXPLORATION CO
Naknek
Pres & gen mgr: Bill Hammersly
AMERICAN CREEK MINE at Naknek, placer, Au, Ag

AMERO, A W
Chandalar
NUMBER 2 above Upper Discovery on Big Creek, Chandalar dist, placer, Au

AMY CREEK MINING CO
Box 870, Fairbanks
Mgr: C M Wells
PLACER MINE on Amy Creek, Tolovana dist dragline-dozer, Au

ANDERSON, EDWARD
Nome
PLACER on Laredo Creek, Nome dist, Au

ANDERSON, ELLIS
Fairbanks
TOBIN CREEK PLACER, Chandalar dist

ANDERSON, HARRY
18226 42nd Ave S, Seattle 88, Wash
MINE in Chandalar dist

ANDERSON & LUOTO
Immachuk
OLD GLORY CREEK PLACER, Fairhaven dist

ANDUR, LUCCHESI
Jonesville
MINE in Koyukuk dist

ANVIL CREEK MINING CO
Ophir
PLACER GOLD MINE

APOLLO MINING CO
Box 529, Juneau
Under option to W S Pekovich
APOLLO-SITKO-DELADORF CONSOLIDATED, Unga Island, underground, Au, Ag, Cu, Pb, Zn
GRAV MILL
Idle

ATLAS MINES
Box 105, Nome
Gen mgr & owner: Geo Waldheim
ATLAS MINES at Nome, open pit & placer, dragline & hydraulic, Au
GRAV MILL, 100 yds daily

ATTWOOD, MERTON J
Chicken
PLACER MINE on Stonehouse Creek, Fortymile dist, hydraulic, Au

AWE MINING CO
Flat
GOLD PLACER MINE near Chicken Creek, 2 draglines, bulldozer, & hydraulic Au, Ag
Idle

BACKSTROM & PEARSON
Flat
IDAHO MINE on Flat Creek, Iditarod dist, placer, hydraulic, Au

BALDWIN & MOON
Haycock
SWEEPSTAKES CREEK PLACER MINE, Koyuk dist

BARTHOLOMAE CORP
1033 Brea Rd, Fullerton, Calif
Pres & gen mgr: Wm A Bartholomae, Jr
GOLD PLACER MINE at Gold Run Creek, Port Clarence
GOLD MINE at Ester Dome, via Fairbanks
B W Vallat, ch engr
Idle

BAUER, RICHARD A
Eagle
MINE at Crooked Creek, Placer, Au

BAUQUIER, JOHN
Flat
Placer on Happy Creek, Iditarod dist, Au

BEATON, NEIL
Ophir
PLACER MINE near Ophir, Innoko dist, Au
Dredge on lower Ganes Creek

BEAVER, JAMES G
Talkeetna
PLACER in Yentna-Cache Creek dist, Au

BEISTLINE & JACKSON
Box 1150, Fairbanks
Mine, Fairbanks, underground, Au
25-TON AMAL-FLOT MILL
Leased from Cleary Hill Mines

BELTZ, JOHN
Haycock
PLACER on Bear Creek, Fairhaven dist, Au

B & E MINING CO
Fairbanks
PLACER on Van Culer's bar, Fairbanks dist, Au

BENICK, EDWARD T
Council
PLACER on Bear Creek, Fairhaven dist, Au

BERG, L C
Box 58, Sitka
BERG BASING, Silver King mining claims, Wrangell, underground, Au, Ag, Pb
Under dev (diamond drilling)

BERRY, C J, DREDGING CO
111 Sutter St, San Francisco, Calif
Pres: A Duane Bush
Purch agt & mine supt: Harold Christensen
GOLD PLACER MINE at Mammoth Creek, Miller House, C-B bucket dredge, 3,000 yds daily

BERRY HOLDING CO
111 Sutter St, San Francisco, Calif
Pres: A Duane Bush
PLACER MINE at Eagle Creek
Lessees: Frasca & Wilson

BIG FOUR MINE
c/o Burr A Hagarty, 4209 S 95th St Tacoma 8, Wash

BIRCH CREEK MINE
Circle dist, Ferry
Owner: Roy Rupp
PLACER MINE
Under dev

BLUNDELL, JOSEPH B
Wiseman
DRIFT MINE on Wakeup Creek, Koyukuk dist, Au

BRADLEY, C W
Talkeetna
GOLD PLACER MINE on Cache Creek

BRANDL, PHIL
Talkeetna
PLACER on Cache Creek, Yetna-Cache Creek Dist

BRENNER, EDWIN A
5000 26th S, Seattle 8, Wash
PLACER on No Grub Creek, Nizina dist, Au

BRINKER-JOHNSON CO
351 California St, San Francisco 4, Calif
Pres: Walter W Johnson
VP: T Keith Johnson
PLACER MINE on Caribou Creek, via Fairbanks, 4a-cu ft dredge, Au, Ag
George Hellerich, mine supt

BROGGER, AXEL
529 E 3rd St, Fairbanks
PLACER MINE on Owl Creek, 40-mile dist

BRONNICH, FRED
Diana, via Gulkana
PLACER MINE on Slope Creek, Fairbanks dist, Au

BRONSON, MRS J L
Ferry
PLACER MINE on Moose Creek, Kantishna dist, Au

BROOKS, JACK
Chicken
PLACER MINE, 40-mile dist, Au

BUFFALO COAL MINING CO, INC
Box 1843, Palmer

CALLAHAN ZINC-LEAD CO, INC
100 Park Ave, New York 17, New York
Pres: Joseph T Hall
VP in chg oper: R F Mahoney
VP: Julian B Beaty
VP: Harold J Hull
Secy: Alfred Ogden
Treas: E A Salo
LIVENGOOD PLACERS, INC, at Livengood, 10,000-yd dredge, Au

CAR, JURICH & MANDICH
Livengood
PLACER MINE on Lillian Creek, Tolovana dist, hydraulic

CARSTENS, H C
Central
PLACER MINE on Portage Creek, dragline-dozer, Au

CASA DE PAGA GOLD CO
411 Hoge Bldg, Seattle, Wash
Pres: Robert Gillespie
Gen mgr: Donald A Stewart
Dir: R Gillespie
Dir: J Hyland
Dir: A L Stitt
Dir: K Fisher
Dir: Geo W Watkins
INMACHUCK PLACER at Deering, Au
Charles R Garrett, engr
Einer Ulricksen, mech engr

CHAPPELL, OLIVER L
Wiseman
DISCOVERY CLAIM in Koyukuk dist, placer, Au

CHEECHAKO MINING CO
Fairbanks
(see V Jokela & C Lazeration)
Lessees: V Jokela & C Lazeration

CHITITU MINES
McCarthy
PLACER MINE at Rex (Chititu)Creek, via McCarthy, hydraulic, Au

CLAICH, MARTIN
1323 First Ave, Seattle, Wash
PLACER MINE on Tanana River, Fairbanks dist

CLARK, DONALD D
Steel Creek
MONTANA #1 PLACER MINE, 40-mi dist

CLEARY HILL MINES
250 Pere Marquette Bldg, Minneapolis, Minn
Pres & gen mgr: R E Wyer
PLACER MINE
LODE MINE at Fairbanks
(see Beistline & Jackson, lessees)

COBLE & FRANCIS
Box 1365, Fairbanks
PLACER MINE on Eureka Creek, Hot Springs Dist, Au

COLLINSVILLE MINES
Box 547, Anchorage
Partners: Carl Durand, J Campbell, Wm Renfrew, Ed Davis, W Neimi, E C Bjornsgaard & W Bjornsgaard
PLACER GOLD MINE, 2,500-yd dragline & Non-Float wash pl

COLORADO CREEK MINING CO
McGrath
PLACER MINE on Colorado Creek, Innoko dist, dragline-dozer, Au

CONNER & DOYLE
Fairbanks
PLACER MINE on New York Creek, Hot Springs dist

COUNCIL DREDGING CO, INC
Rt 2, Box 2055, Edmonds, Wash
Pres: H A Dent
Gen mgr & dir: F K Dent
Dir: R S Whaley
MINE at Ophir Creek, Bucket dredge, Au, Ag
Idle

COYLE & RASMUSSEN MINING CO
Box 1918, Fairbanks,
Partner-owners: D Coyle & W E Rasmussen
PLACER MINE on Midnight Creek, Ruby dist, hydraulic, dozer, Au

CRANE, FRED D & M E KELLY
Nome
CAPE MOUNTAIN MINE, 105 mi N of Nome on Seward Peninsula, Sn
Under dev

CRIPPLE CREEK MINING CO
Box 622, Fairbanks
Open-Pit Coal Operation, Suntrana
A Ben Shallit, supt

CULVER, WALTER G & CO
Rt 1 Box 690, Warrenton, Ore
PLACER MINE on Fox Creek, Goodnews Bay dist, dozer-hydraulic operation, Au

CUMMINS, LARRY
Takeetna
PLACER MINE, Yentna-Cache Creek dist, Au

CURRAN, PETER
Solomon
PLACER MINE on West Creek, Council Bluff dist, Au

DAHL & BERNARD EXPLORATION CO
c/o Albert Bernard, Box 1505, Fairbanks
PLACER MINE on Bear Creek, Fairhaven dist, Au

DAHL, ROBERT
Talkeetna
NUMBER 2 BELOW on Nugget Creek, Yentna-Cache Creek dist, placer

DAWSON MINE
Hollis, Prince of Wales Island
Owner & Operator: Wendell Dawson
MINE & GRAV MILL, Au, Ag, Prod 25 tons

DEADWOOD MINING CO
Box 152, Fairbanks
Gen mgr: E H Wrede
Dir & purch agt: E H Wrede
DEADWOOD MINE, placer, 400-yd hydraulic, Au, Ag

DEAN, TOM
Hot Springs
PLACER MINE in Miller Gulch, Hot Springs dist, Au

DE COURCEY MOUNTAIN MINING CO
Crooked Creek
Owner: R F Lyman
Mine in Otter Precinct, placer, Hg, Pt

DEGAN, J A MINING CO
Ophir
PLACER MINE on Ophir Creek, Innoko dist, dragline-dozer, Au

DEMPSEY, C L
Box 325, Nome
PLACER MINE on Lower Willow Creek, 50 mi NE of Nome, 2a-cu-ft bucketline dredge, Au
Under dev

DIAMOND COAL CO
Box 754, Fairbanks

DICK CREEK PLACERS
Nome
Pres: George Bodis
GOLD PLACER MINE
12,000 yds yearly prod

DINAN, FRANK J
Rampart
GOLD PLACER near Rampart

DISCOVERY MINING CO
Fairbanks
PLACER MINE on Pedro Creek, Fairbanks dist, Au

DOMINION CREEK MINING CO
Ophir
PLACER MINE on Independence Creek, Ophir dist

DOYLE, GEORGE P
Wiseman
PLACER MINE on Vermont Creek, Koyukuk dist, Au

DOYLE, JERRY
Hot Springs
PLACER MINE on Woodchopper Creek, Hot Springs dist, Au

DRAGON, LEE
Fairbanks
PLACER MINE on Forty-Mile River, 40-mile dist

DRAZENOVICH, PAUL
Fairbanks
PLACER MINE on Fish Creek, Bonnifield-Nenana dist, Au

DUTCH CREEK MINE
Talkeetna
Owner & mgr: Mike Trepte
PLACER MINE near Yentna, hydraulic monitors, Au

DUVALL, J WM
Steel Creek
GOLD PLACER MINE

EDMONDSON, GEO W
Gen del, Fairbanks
GOLD PLACER MINE on Forty-Mile River, 40-mile dist

EMPIRE TIN MINING CO
c/o Carl M Welte, 34 E Town St, Norwichtown, Conn
Dir & trustee: Carl M Welte
Dir & trustee: Henry G Krakaur
30 mining claims at Cape Mountain, Cape Prince of Wales, Tin City, underground, Sn
Idle

ENGELHORN, FORREST L
Los Molinos, Calif
PLACER MINE on Cache Creek, Yentna-Cache Creek dist, Au

ENGSTROM, HERBERT
Nome
PLACER MINE on Basin Creek, Cape Nome Precinct, Au

ENSTROM & McDOUGALL
Fairbanks
PLACER MINE at American Creek, Hot Springs dist, hydraulic, Au

ERNST, HENRY J
Box 229, Fairbanks
PLACER MINE on Bloomer Creek, Talkeetna dist

EVAN JONES COAL CO
Box 619, Anchorage
Harvey H Hiber, supt, Jonesville

FAIRBANKS EXPLORATION CO
(See United States Smelting Refining & Mining Co)

FAIRBANKS GOLD DREDGING CO, CAROLANDS
Burlingame P O, Calif
Managing Partner: A J Watson
OPEN PIT MINE at Fairbanks Creek, dragline dredge, Au, Ag
Idle

FAIRFIELD, WALLACE
Cantwell
DRIFT MINE on Valdez Creek, Talkeetna Precinct, Au

FALLS CREEK MINING CO
Seward
Pres & gen mgr: S A Liening
VP & Secy: A R Bergersen
SKEEN-LECHNER MINE near Seward, Au, Ag
25-TON FLOT MILL

FEJES & STRANG
Rampart
PLACER MINE on Ruby Creek, Rampart dist, Dozer, Au

FERN GOLD MINING CO
502 Columbia Bldg, Spokane, Wash
Pres: Jerome L Drumheller
VP: Martin Woldson
Secy: L R Gordon
FERN MINE at Wasilla, underground, Au
60-TON AMAL FLOT MILL

FOUR A MINING CO
Box 1498, Fairbanks
Partners: Tury F Anderson, C J Koudelka
GOLD PLACER on Pedro Creek, Fairbanks dist dozer, hydraulic

FRANKLIN MINING CO
Box 1993, Fairbanks
Partners: Howard Bayless, Dick Roberts, Bob Roberts & Ellis Roberts
GOLD PLACER MINES at Franklin & Chicken hydraulic, dragline, dozer
Leased from Fred Whitehead

FRASCA & GIBSON
c/o John Frasca, Miller House
PLACER MINE on Eagle Creek (Mastadon Fork), Circle dist, Hydraulic-dozer
Leased from Berry Holding Co

FRENCH, WM
Candle
PLACER MINE on Jump Creek, Fairhaven Precinct, hydraulic, Au

GAGNON PLACER MINES
Box 821, Anchorage
Owner: Paul L Gagnon, Anchorage
GAGNON PLACER MINES, Talkeetna, hydraulic, Au, W
Under dev

GEARHART, H O
Boundary
PLACER MINE, Yukon River Basin region, Au

GLASS, CLYDE D
Solomon via Nome
PLACER MINE on Solomon River, Nome dist

G M & M CO
Fairbanks
PLACER MINE, Yukon River Basin region, Au

GOLD BEACH DREDGING CO
351 California St, San Francisco
Pres: C E Pohl
GOLD PLACER MINE at Nome, bucket dredge, Au
2,000-cu-yds prod daily
Idle

GOLD DUST MINING CO
Nome
Gen mgr: John L Bullock
PLACER MINE, on Kougarok River, Au
Bucket Dredge
2,500 cu yds daily

GOLD MINT MINING CO
Hope
Gen mgr: D Whiting
MINE at Palmer Creek, Kenai, Au
Gordon Gallup, mine supt
Under dev

GOLD PLACERS, INC
4556 University Way, Seattle, Wash
Pres & gen mgr: Ernest N Patty
VP: Walter Seligmon
Dir: E B Bull
Dir: Mrs A D McRae
GOLD PLACER MINE on Coal Creek, Circle dist, P O Coal Creek, 4 cu-yd dredge

GOLD STRIP MINES
Hank Harris, Nome
PLACER MINE on Snake River, Nome dist, Au

GOODNEWS BAY MINING CO, INC
423 White Bldg, Seattle 1, Wash
Pres: Andrew O Olson
Gen mgr: Edward Olson
Dir: Axel Palmgren
Purch agt: John C Hill
GOODNEWS BAY MINING CO, placer, bucketline & hydraulic & dragline-dozer, Pt
Winston W Spencer, engr

GRANITE CREEK MINING CO
Ruby
W Carlo & J J May
PLACER MINE on Ophir Creek, Ruby dist, Dozer & elevated sluice, Au

GRANT LAKE MINE
Moose Pass
Owner: William Kelly
GRANT LAKE QUARTZ MINE, 4 mi E of Moose Pass, underground, Au, Ag
GRAV MILL & SMELTER
Under dev

GRANT MINING CO
Nome
Gen mgr: Henry Wuhrman
PLACER MINE at Coffee Creek, Kougarok dist hydraulic, Au

GREIST, DAVID
Selawic
PLACER MINE on Selawic River, Selawic dist, Au

GRUBSTAKE MINE, INC
Wasilla
MINE at Grubstake Creek, Knik, Au
MILL is small
Under dev

GURTLER & MYKLEBUST
Ophir
PLACER MINE on Little & Anvil Creeks

HAAGSTROM, CARL N
Fairbanks
PLACER MINE on Grubstake Creek, Bonnifield-Nenana dist

HAGBERG, MRS LAURA
Haycock
PLACER MINE on Bear Creek, Fairhaven dist, Au

HAMBERG & GLISKA
Talkeetna
PLACER MINE on Pass Creek, Yentna-Cache dist

HANNUM CREEK MINING CO
Inmachuck via Deering
PLACER MINE on Hannum Creek, Fairhaven dist, Au

HARD & UOTILA
Ophir
Mgr: Eric Hard
FORGOTTEN BENCH PLACER, Innoko dist nonfloat

HARRISON CREEK MINING CO
Miller House
HARRISON CREEK PLACER MINE, North Fork of Harrison Creek, Circle dist
1,000-yds hydraulic
Ray R Hamilton, mgr
Wilmer A Kirsch, mine foreman

HAROLD HASSEL & STICKA
Fairbanks
MINE on Ready Bullion Creek, stripping & ground sluicing, Au

HATTON & TURNER
Flat
PLACER MINE at Flat, Au

HAVENSTRITE MINING CO
311 West 7th St, Los Angeles 14, Calif
Pres: R E Havenstrite
Gen mgr: Jack Allan
Purch agt: Joe Kroninger
MID CREEK OPERATIONS, Candle, dredge, Au
CANDLE CREEK OPERATIONS, Candle, dragline
Harry B Palmer, engr

HAYES & WHITLEY ENTERPRISES
Box 856, Juneau
Partner: Howard Hayes
Partner: Stan Whitley
ALASKA JUNEAU tailings owned by
Alaska Juneau Mining Co
TREADWELL tailings
Recovery of gold by placer methods
CHICAGOFF MINING CO, tailings, Au, Ag
GRAV-FLOT MILL

HEALY RIVER COAL CORP
Box 1210, Fairbanks
James Thorp, supt
Santrana

HELCOLICON MINES, INC
Pres: Robert C Armstrong, 1005 Ruddiman
Ave, North Muskegon, Mich
C-B DREDGE on Klery Creek, Kiana dist
Formerly owned by Lammers Exploration Co

HIRST-CHICHAGOF MINING CO
415 7th Ave South, Seattle, Wash
HIRST-CHICHAGOF MINE, Chichagof Isl dist,
Au lode
Under dev

HOMER COAL CORP
Box 95, Homer
John T Howell, Homer, supt

HOPE MINE
Robert V Watkins, Box 521, Fairbanks
PLACER MINE on Deep & Faith Creeks,
Hydraulic-dozer, Au

HOPKOK CHIEF MINING CO
Nome
PLACER MINE at Bluff near Nome, Au
36-ft bucket dredge

HOSLER MINES
c/o Elmer Hosler, Mgr, McKinley Park
PLACER MINE on Eureka Creek, Kantishna
dist, nonfloat opr

HOUSTON COAL MINING CO, INC
Box 2134, Anchorage
George H Tucker & Ralph D Peterson,
Houston, supts

HUDSON BAY EXPLORATION & DEVELOPMENT CO, LTD
500 Royal Bank Bldg, Winnipeg, Man
Pres: R H Channing
VP: W A Green & Erich Weber
Secy-treas: J W Bringhurst
Gen mgr: J P Caulfield

HUNTER & BURNETT
Fairbanks
PLACER MINE on Crooked Creek, Kantishna
dist, hydraulic

HUNTER CREEK MINING CO
c/o Helo Jackovich, Box 92, Fairbanks
PLACER MINE on Hunter Creek, Rampart
dist, Au
Dozer-Hydraulic

HURST, VERNON J
Fairbanks
PLACER MINE, Chandalar dist, Au

HUTTULA, REINO
Fairbanks
PLACER MINE on Gilmore Creek, Fairbanks
dist, Au

IDITAROD OPERATING CO
Tanaina
Gen mgr: Geo Rosander
Partners: F Edgington & Lars Indegard
PLACER MINE, Kallands Landing, Au, Ag

INNOKO DREDGING CO, INC
900 American Bldg, Seattle, Wash
Pres: James F Griffiths
VP: John Repo
Secy: F H Molitor
Purch agt: H J Molitor
GANES CREEK MINE, Ganes Creek, Ophir
Bucket dredge, Au, Ag
3,000 yds daily prod

JACKSON, KIRK D
Solomon
GOLD PLACER on Big Hurrah Creek, Nome dist

JACKSON MINE
Box 365, Fairbanks
Owner & Operator: Nels Jackson
PLACER MINE at Totatlanika
Alaska R R Ferry, hydraulic dredge &
dozer, Au
Under dev

JANEAU, E A
Steel Creek
SMITH CREEK BENCH CLAIMS, 1 mi downstream
from P O, hydraulic, Au

JOHNSON, ARTHUR D
Haycock
PLACER MINE on Sweepstake Creek, Koyuk
dist, Au

JOHNSON, AXEL
Council
PLACER MINE on Pancake Creek, Council-
Bluff dist, Au

JOHNSON, FURSETH & TROSETH
Fairbanks
PLACER MINE on Cleary Creek, Au

JOHNSON, HELMER
Box 935, Fairbanks
PLACER MINE on Cleary Creek, Fairbanks
dist, hydraulic-dozer, Au

JOHNSON, IVER & CO
Ruby
PLACER MINE on Trail Creek, Ruby dist,
hydraulic, Au

JOHNSON & JOHNSON CO
Box 914, Fairbanks
PLACER MINE on Eureka Creek & Glen Gulch,
hydraulic

JOHNSON, PETE
Hot Springs
PLACER MINE on Eureka Creek, Hot Springs
dist

JOHNSON, SELMER H
Box 693, Nome
PLACER MINE on Eldorado Creek, Kougarok
dist, hydraulic

JOKELA & LAZERATION
Partners: Verne Jokela & Charles
Lazeration, P O Box 2000, Fairbanks
GREENBACK CLAIMS on Pedro Dome, 22 mi
N of Fairbanks, underground, Au, Ag
Leased from Cheechako Mng Co

JONES, ROBERT H
Wiseman
PLACER MINE on Smith Creek, Koyukuk dist

JUMP CREEK MINES
Candle
Owner: Fred Weinard
Gen mgr: O F Weinard
PLACER MINE, hydraulic, Au

KANARI & CAREY MINING CO
Box 255, Nome
PLACER MINE on Kougarok River, Cape Nome
Precinct, hydraulic, Au

KELLY & WILKINSON
Miller House
PLACER MINE on Miller Creek, Circle dist
Dozer-hydraulic, Au

KINNEY, MRS PAUL
Haycock
PLACER MINE on Sweepstake Creek, Koyuk
dist, Au

KLOSS & DAVIS
Sunset Cove
Partners: Herman Kloss & Jack Davis
40 PER MINE, Sunset Cove, underground,
Pb, Zn
Small mill
Idle

KOUGAROK CONSOLIDATED PLACERS, INC
Nome
Pres: Elroy Royce
Dir: Elroy Royce, A L Schneider, F J
Cutting, Audrey Cutting & C C Stearns
Mgr: F J Cutting
PLACER MINE at Nome, Au

KOUGAROK FREIGHTING & MINING CO
Nome
PLACER MINE on Buster Creek, Nome dist, Au
Under dev

KUPOFF, N O
Fairbanks
PLACER MINE on Pedro Creek, Fairbanks dist
Au

KVAMME, JENS, & SONS MINE
Aniak
PLACER MINE on Canyon Creek, Tuluksak-
Aniak dist, hydraulic-Dozer, Au
77 cu yds daily prod

LANE, SOLOMON
BIG HURRAH MINE, Au, W
MILL
Under dev

LANGLOW, JENS
Central
PLACER MINE on Smith Creek, Circle dist

LARSEN & WINDISH
Hot Springs
DRIFT MINE on Woodchopper Creek, Hot
Springs dist, Au
Prospecting venture

LEACH, F M
Circle Hot Springs
PLACER MINE on Portage Creek, Circle
dist, Au

LEE BROS DREDGING CO
Solomon
Gen mgr: Richard E Lee
PLACER MINE on Solomon River, Seward
Peninsula, bucketline, Au, Ag
Richard C Lee, mine supt
Allan W Lee, mech engr
7,500 cu yds daily prod

LEONARD, HARRY B
Wiseman
PLACER MINE on Gold Creek, Koyukuk
dist, Au

LEOV, HARRY
Flat
PLACER MINE on Malamute Fup, Iditarod
dist, hydraulic, Au

LeROY MINING CO
Juneau
RAINBOW & LeROY MINES at Glacier Bay,
underground, Au

LINN MINE
Long
PLACER MINE at Trail Creek, Nulato,
dragline, Au

LITTLE MINOOK MINING CO
Box 1505, Fairbanks
Mgr, purch agt & mine supt: Albin Martin
PLACER MINE on Little Minook Creek,
Rampart dist, dragline & hydraulic,
800-yd, Au, Ag
Pasco, engr

LIVENGOOD PLACERS, INC
(see Callahan Zinc-Lead Co)

LONG CREEK MINING CO
Ruby
(pres mailing address, Arlington, Wash)
Mgr: Hans Tilleson
PLACER MINE at Long Creek, hydraulic &
dragline, Au, Ag

LOST CHICKEN MINING CO
Chicken
Partner-owners: Harold Pierce &
James Hulbert
PLACER MINE on Lost Chicken Creek,
Forty-mile dist, dozer, hydraulic, Au

LOUIS, FRANK
Box 810, Fairbanks
PLACER MINE on No Grub Creek, Fairbanks
dist, Au

LUCKY NELL MINING CO
1505 Puget Sound Bank Bldg, Tacoma, Wash
Pres: Ben J Scott
Dir, VP & gen mgr: Homer H Tilley
LUCKY NELL MINE at Ketchican, Au, Ag, Pb
J J Matvska, Alaska agt
Clyde S Maxwell, mine foreman
50-TON FLOT MILL
Under dev

LUNDSTROM & STOUT
Chicken
Mgr: Elmo Stout
PLACER MINE on Napoleon Creek, dozer &
hydraulic, Au

MACKLIN MINING CO
Kougarok via Nome
Partners: Henry Wuhrman, E K Johansen
PLACER MINE on Macklin Creek, Kougarok
dist, hydraulic, Au

MADDEN, LYMAN H
Kougarok via Nome
PLACER MINE on Garfield Creek, Kougarok
dist, Au

MANICA, HUMBERT
Nome
PLACER MINE on Darling Creek, Nome
dist, Au

MARGRAF & KOWOWSKY
Nome
LODE PROSPECT on Charlie Creek, Nome
dist, Bi

MARTIN, G B
Box 662, Fairbanks
PLACER MINE on Banner Creek, Fairbanks
dist, Dozer-hydraulic, Au

MARTIN & MARTIN MINING CO
Box 662, Fairbanks
Pres & gen mgr: A I Martin
Purch agt & mine supt: G B Martin
PEDRO MINE, DISCOVERY CLAIM, Pedro Creek,
near Fairbanks, placer, dozer &
hydraulic, Au
A B Martin: engr
100 cu yds per hour

MARTINSEN, OLE
Teller
PLACER MINE on Gold Run River, Port
Clarence dist

MARVEL CREEK MINING CO
Aniak
Gen mgr: C J Awe & Partner
MARVEL CREEK MINE, Aniak, placer, drag-
line-hydraulic, Au
1,000-yds per shift

MAURER, ERNEST
Box 728, Fairbanks
FIRST CHANCE CREEK MINE, open pit &
placer, Au

McDONALD, JAMES J
Hot Springs
PLACER MINE on Pioneer Creek, Hot Springs
dist, Au

McFARLAND, I C
Ophir
PLACER MINE on Little Creek, Innoko dist,
Au

McIVER, WALLACE
Council
PLACER MINE on Crooked Creek, Council-
Bluff dist, Au

McMAHAN, C J
Box 1614, Palmer
PLACER MINE on Albert Creek, Nelchina dist
dozer, Au

MELDRUM, WM
Chicken
NUMBER 1 above Discovery Claim, on
Chicken Creek, 40 mi dist, open-pit &
placer, Au

MIDDLE FORK MINING CO
803 Artic Bldg, Seattle, Wash
Pres: H E Cleveland
PLACER MINE at Gulkana, Au
J F Malony, gen mgr
M W Jasper, engr
Under dev

MILLER, FRANK J
Wiseman
PLACER MINE, on Sheep Creek, Au

MILLIGAN, C F
Council
PLACER MINE on Ophir Creek, Council-
Bluff dist, Hydraulic, Au

MISCOVITCH, PETER & SONS
Poorman (also Flat)
PLACER MINE on Flat Creek, Ruby dist,
dozer, dragline, hydraulic, Au
PLACER MINE on Otter Creek near Flat,
hydraulic, dozer, hoe shovel

MONTAGUE, STERLING
Monroe, Wash
PLACER MINE on Buzzard Creek, Kougarok
dist, Au

MONTANA LEAD & ZINC CO
Box 1771, Ketchikan
Pres: Robert Crowe-Swords
MAHONEY MINE, George Inlet, underground,
Pb, Zn
FLOT MILL
Idle

MOORE CREEK MINING CO
(Now Taylor Creek Placers)

MORLOCK MINING CO
Tanana
PLACER MINE on Rosa Creek, Hughes dist

MOUNT KIMBALL CONSTRUCTION CO
Slate Creek via Gulkana
PLACER MINE on Slate Creek, Chistochina
dist, Au
Leased from Slate Creek Gold Placers

MUNZ, WILLIAM S
Nome
PLACER MINE on Rock Creek, Council-
Bluff dist, Au

MYRTLE CREEK MINING CO
Box 766, Fairbanks &
800 American Bldg, Seattle, Wash
Partner: F H Molitor
PLACER MINE on Myrtle Creek near Wiseman
hydraulic, Au, Ag
R W Kransi, Mgr

NASHENWENG & BLISS
Nome
PLACER MINE on Quartz Creek, Kougarok dist
hydraulic-dozer, Au

NASS-KASS-OLSEN MINE
Haycock
MINE at Dime Creek, Kovuk, drift operation
Au
Under dev

NAUDTS, CASIMIR
Ophir
PLACER MINE on Tonker Creek, Innoko dist,
shovel-in operation, Au

NECK, V E
Wiseman
PLACER MINE on Myrtle Creek, Koyukuk
dist, Au

NELSON, NELS
Council
PLACER MINE on Meising & Ophir Creeks,
Council-Bluff dist, Au

NELSON, WALLACE
Haycock
PLACER MINE on Sweepstake Creek, Koyuk
dist, Au

NESLAND & WHITE
Wiseman
PLACER MINE on Vermont Creek, Koyukuk dist
nonfloat operation

NEW HOPE-HIRSHEY MINE
Box 114, Seward
Owner: Elwyn Swetmann
Au, Ag
Idle

NEW IDRIA QUICKSILVER MINING CO
1000 Mills Bldg, San Francisco 4, Calif
Pres: G I Gould
Secy: C S Balch
Purch agt: E A Green
Mgr & gen supt: C H Lewis
RED DEVIL MINE near Flat, underground, Hg
Operated by Mellick & Halvorson
36-ton Gould rotary furnace

NEWLAN, JAMES
Box 1170, Fairbanks
PLACER MINE on Pedro Creek, Fairbanks dist, Au

NEW YORK-ALASKA GOLD DREDGING CORP
1616 Smith Tower, Seattle, Wash
Pres: Alfred Ely, 41 Broad St, New York, New York
VP & managing dir: James K Crowdy, 1616 Smith Tower, Seattle, Wash
Asst-treas: Miss F Barley, Seattle First National Bank, Seattle, Wash
Secy: Charles S Ernst
Purch agt: Lyman E Robbins
NEW YORK-ALASKA GOLD DREDGING CORP, Nyac
60 mi NE of Bethel, placer, bucketline, dragline, Au
William H Nace, mine engr
Clarence Clark, elec engr

NIEMI, WAYNE J
Box 1791, Mountain View
PLACER MINE on Jumper Creek, Yukon River Basin region, Au

NIUKLUK MINING CO
Council
PLACER MINE on Niukluk River, Council Bluff dist

NOONAN & WHITMORE
Box 615, Nome
Leased from M J Walsh
MARCOT GULCH MINE, placer, nonfloat, dragline, hydraulic, dozer

NORDHEIM & ANDERSON
Fairbanks
PLACER MINE on Jumper Creek, Hot Springs dist, Au

NORTH AMERICAN DREDGING CO
Flat
Owner & gen mgr: Alex Mathieson
PLACER MINE at Flat, Iditarod dist
2,500-yd bucketline, Au

NORTHERN TIN CO
Nome or c/o George R Ramstead, 8804 5th Ave NE, Seattle
Mgr: M Clifford Smith Jr
PLACER MINE, Buck Creek, Seward Peninsula
dragline, hydraulic, Sn
George Ramstad, supt

NORTH FORK DREDGING CO
Nome
Owner: A J Petersen
Lessee: MacDonald & Reader
HARRIS CREEK MINE, placer, 3 cu ft bucketline, Au

NOVATNEY, ROBERT A
Ketchikan
MILLER'S LEDGE & LODGE LODE MINES, Ketchikan dist
Under dev

O'LEARY & CO
Nome
PLACER MINE on Bluestone River, Port Clarence dist

OLIVE CREEK MINES
Box 2020, Fairbanks, or c/o C Parker Box 552, Fairbanks
PLACER MINE on Olive Creek, Tolovana dist, Au

OLSEN, SEWARD
Wiseman
PLACER MINE on Crevice Creek, Koyukuk dist, Au

OLSON, A E
Fairbanks
PLACER MINE on O'Brien Creek, Tolovana dist

OPSATA & SILVER
Nome
R W Silver property between Solomon River & Trilby Creek
LODE MINE
Under dev

PETERSON, ANDREW
Nome
PLACER MINE on Iron Creek, Nome dist, Au

PIERCE, J H
Rampart
PLACER MINE on Hoosier Creek, Rampart dist, Au

PIERCE, JIM
Nordale Hotel, Fairbanks
PLACER MINE in Fairbanks dist

PILGRIM, EARL R & CO
Box 1890, Fairbanks
Owner & mgr: Earl R Pilgrim
STAMPEDE ANTIMONY MINE at Stampede, Kantishna dist, underground, Sb
Robert H Rouse, mine fore
40-TON GRAV MILL

PITTS, E H
Big Lake
LAKE CREEK PLACERS MINE, Big Lake, open pit & placer, hydraulic, Au
3,500 cu yds prod

PORTAGE MINING CO
Fairbanks
PLACER MINE on Portage Creek, Circle dist, Au

PORTER, WALLACE
Haycock
PLACER MINE on Bear Creek, Au

POWERS MINE
Eagle
MINE at Dome Creek, via Eagle, hydraulic, Au

P R & H MINING CO
Box 462, Fairbanks
Partners: Parker Hopkins & Raymond Hopkins
PLACER MINE on Deadwood Creek, Circle dist
nonfloat, dozer

PRICE, STAN
Windham
PLACER MINE, 500-yd dozer operation, Au, Ag

PRINCE CREEK MINING CO
Mgr: Harry Agoff, Flat Creek
PLACER MINE on Prince Creek, Iditarod dist, hydraulic-dozer

PRINGLE, A W
Hot Springs
MINE on Rhode Island Creek, hydraulic, Au

PURDY BROS
Fairbanks
Partners: Arthur Purdy & Fred Purdy
MEYERS FORK & CHICKEN CREEK PLACERS, Forty-mile dist, nonfloat

QUIGLEY MINE
Solomon
Owner: W E Quigley
PLACER MINE at Solomon River, Cape Nome, hydraulic, Au

RADOK, JOHN
Livengood
PLACER MINE on Ruth Creek, Tolovana dist hydraulic, Au

RAINBOW MINES
Kougarok via Nome
PLACER MINE, Kougarok dist, Au

RASSMUS, PAUL
Box 398, Nome
PLACER MINE on Quartz Creek, Kougarok dist, Au

RASSMUSSEN, W
Fairbanks
PLACER MINE on Big Creek, Chandalar dist, Au

REDE, MAX
Fairbanks
PLACER MINE on Pedro Creek, Fairbanks dist, Au

RICE, C F & CO
Teller
PLACER MINE at Sunset Creek, Port Clarence hydraulic, Au

RILEY, J E INVESTMENT CO
Flat
PLACER MINE on Otter Creek near Flat
Partner: Thomas Jensen
Sam Applebaum (of Flat)
3½ cu yd dredge, hydraulic, Au
Under dev

RIVERSIDE MINE
Merchants Exchange Bldg, San Francisco, Calif
MINE near Hyder, 100-ton concentrator, Au, Ag, Pb, W
J H Scott, gen mgr

ROCKY MOUNTAIN MINING CO
Box 78, Nome
Partners: May Bale & Hugo Kindfors
PLACER MINE on Christian Creek, Au, W

ROLANDO, NORMAN
821 S Yakima Ave, Tacoma, Wash
PLACER on Game Creek, Council dist

ROMAN, WALTER
Central
PLACER MINE in Mastadon Creek, Koyuk dist, Au

ROSANDER & REED
Box 451, Fairbanks
Pres: T Rosander
PLACER MINE on Yankee Creek, Innoko Dist, dragline, dozer-hydraulic, Au

RUSH & BROWN MINE
Prince of Wales Island
RUSH & BROWN MINE, 1½ mi W of Salt Chuck, underground, Cu, Pa
300-TON FLOT MILL
Under dev

RYLANDER, SOPHIE
Haycock
PLACER MINE on Sweepstake Creek, Koyuk dist, Au

SAMUELSON & SHAW
Fairbanks
PLACER MINE on Goldstream Creek, Fairbanks dist, Au

SANTIAGO-ALASKA MINES, INC
227 Commercial Bldg, Ketchikan
Pres: R Crowe-Swords
VP: C R M Cale
Secy-treas: S B Snell
Underground Mine, Dolomi, Au
A W Erickson, res engr
H Tweit, mine mgr
100-TON CYANIDE MILL
W Griffiths, mill mgr & met
Under dev

SAVAGE & MATHESON
Ophir
Gen mgr: Hugh Matheson
PLACER MINE on Spruce Creek, 1200-yd dozer-hydraulic, Au

SAVAGE, PATRICK
Flat
PLACERS on Flat & Willon Creeks, Iditarod dist, dragline-dozers, Au

SCHAEFER, RUSSEL R
Crooked Creek
PLACER MINE on Forty-seven Creek, Kuskokwim region, Au

SCOTT, TOLBERT & SON
Nome
MINE at Iron Creek, Cape Nome, bucketline, Au
Robert Scott, mech engr
Wilson Scott, electrician

SELLERS, R W
Fairbanks
PLACER MINE on Big Creek, Chandalar dist, Au

SHAW & COOK
Unalakleet
PLACER MINE in Hopeful Gulch, Au

SILVER BOW MINING CO
Box 603, Nome
COFFEE CREEK PLACER, Kougarok dist

SLATE CREEK GOLD PLACERS
Owner: J M Elmer, Valdez
PLACER MINE at Slate Creek, Chitina hydraulic, Au
Idle

SMITH, FRANK H
Wild Lake via Wiseman
PLACER MINE on Spring Creek, Koyukuk dist, Au

SNOWBIRD MINING CO, INC
Box 1719, Anchorage
Pres & gen mgr: Chris Poulsen
VP: Cappy Farce
Secy-treas: Charles J Johnston
SNOWBIRD MINE, Willow Creek area, underground, Au
Phil R Holdsworth, supt & engr
James Gleason, mine fore
Jack Bridgeford, elec engr
FLOT MILL
Ole Jensen, mill fore
Idle

SOURDOUGH DREDGING CO
Nome
Partners: Chester Milligan, Jack LaCross, H E Janeway
MINE at Council, bucketline, Au

SOUTH FORK MINING CO
Box 507, Fairbanks
Owner: Gus Uotila, Ophir
Owner: Victor Nick, Koyukuk
Owner: John Ogriz, Flat
Owner: Elmer Keturi, Moore Creek
MINE in Koyukuk dist, E of Bettles, dozer dragline, Au

SQUAW CREEK MINING CO
c/o Jack Wilkey, Boundary, Forty-mile dist

SROUFE, WARD
Box 718, Anchorage
OLD MARRIED TWINS MINE, Willow Creek dist, lode Au

STANICH, SAM & OBREN
Wiseman
PLACER MINE on Porcupine Creek, drift operation, Au

STEEN, HARRY
Flat
PLACER MINE on Julian Creek, Iditarod dist, Au

STEPOVICH MINE
Fairbanks
Owner: Mike Stepovich
Under lease to U S Smelting & Refining
PLACER MINE on Lower Fish Creek

STRANBERG & SONS
Box 2099, Anchorage
C-B Dredge on Candle Creek, McGrath dist
Dragline-dozer on Utopia Creek, Hughes dist, placers, Au

STUVER, JULIAN
Flat
PLACER MINE on Happy Creek, Iditarod dist, Au

SUNSET MINING CO
Box 1595, Anchorage
Partner: Jack Neubauer
OPEN PIT PLACER MINE, hydraulic, 5 cars Au

SWANSON BROS
Rampart
PLACER MINE on Hunter Creek, Rampart Dist, Au

TARASKI, A J
Talkeetna
PLACER MINE on Cache Creek, Au

TAYLOR CREEK PLACERS
Fairbanks
(Formerly Moore Creek Mining Co)
Partners: Elmer Keturi, Gus Uotila, Eugene Uotila, John Ogriy
PLACER MINE, Sleetmute, dozer, dragline, Au

TELLER MINING CO, INC
609 Colman Bldg, Seattle, Wash
Pres: E W Wardin
VP: C B Setter
VP: A G Johnson
Gen mgr: Frank L Rice
Asst gen mgr & engr: Larry Garfield
SUNSET CREEK MINE, Teller, placer, dragline, hydraulic, Au, Ag
Under dev with some prod

TERREL, FRED
Wiseman
PLACER MINE on Garnet Creek, Koyukuk dist, Au

TIEPELMAN, FRED S
Kobuk, Klery Creek, Kiana dist

TIGER TALISMAN PLACER
Box 294, Nome
Mgr: J H Alexander
250-yd hydraulic, Au, Ag

TRONSTAD & GOODWICK
Kobuk
PLACER on Dahl Creek, Skungnak dist

TWEET, N B & SONS
Teller
PLACER MINE on Humboldt Creek, Fairview dist, hydraulic, Au

UHLER CREEK MINING CO
Box 674, Fairbanks
Partners: R A Brown, Marcel A Straiger, Aubrey C Dill & Louie Paun
UHLER CREEK MINE, placer, dozers, hydraulic, Au

UNITED STATES SMELTING REFINING & MINING CO
75 Federal Street, Boston, Mass
Pres: F S Mulock
FAIRBANKS, ALASKA, OPERATIONS
Roy B Earling, VP & gen mgr of Alaskan operations
J D Crawford, mgr, Fairbanks Dept
8 BUCKET DREDGES, Fairbanks dist
4 BUCKET DREDGES, Nome dist

UNITED STATES TIN CORP
201 Jones Bldg, Seattle 1, Wash
Pres: H R Fischnaller
Secy: H C Rohrback
Purch agt: F H Furey
LOST RIVER TIN MINE, Teller, underground & placer, Sn, W
A F McIntosh, gen mgr & mine fore
J H McDonald, mine supt
Erwin Adler, met

UOTILA & HARD
Ophir
Mgr: Gus Uotila
HARD MINE, on Ophir Creek, Innoko dist placer, dozer, dragline, Au

UOTILA & OGRIZ
Flat
Owner & mgr: John Ogriz
Owner & partner: Uotila
SLATE CREEK PLACER MINE, Flat, dozer dragline, hydraulic, Au

USIBELLI COAL MINE, INC
Suntrana, open-pit
G A Gustafson, supt

VAGABOND MINE
c/o L E Chester, Eagle
PLACER on Seventy Mile River, Au
Under dev, expect to install dredge

VAN WINDEN, JOHN
1451 E 23rd St, Oakland, Calif
PLACER on Ready Bullion Creek

VICTOR CREEK MINING CO
Ophir, Carlson & Lindquist, c/o Ivor C Carlson
PLACER MINE on Victor Creek, Innoko dist, dozer, Au

VIRDEN, E P
Fox
NUMBER 12 MINE above Discovery in Fox Gulch, placer, Au

VURCICH, BILLY
Box 1496, Fairbanks
PLACER on Sheep Creek

VUYOVICK, JOHN
Fairbanks
GOLD LODE MINE on Ester Dome, Fairbanks dist

WACKITZ, FRED
Box 1595, Fairbanks
PLACER on Cleary Creek, Fairbanks dist

WADE CREEK DREDGING CO
Box 1108, Fairbanks
Mgr: L J Stampe
PLACER MINE on Wade Creek, Au
1,200 yd per day dozer operation

WAGER BROS
Box 809, Fairbanks
PLACER MINE on Gold King Creek, Bonnifield Nenana dist, Au

WALSH, M J
Nome
PLACER on Mascot Gulch, Nome dist, Au
Lessees: Noonan & Whitmore

WARWICK MINES
Box 807, Fairbanks
Gen mgr: Andy Warick
Gen supt: W M Warick
Acct: E M Warwick
PLACER on Gertrude Creek, 2 mi NE of Livengood, Tolovana dist, hydraulic & dozer, Au
GRAV MILL

WATSON, B B
Cape Yakataga
BEACH PLACER, Yakataga dist, Au

WEAVER, VERNON
Chicken
PLACER MINE on 40-mi River, 40-mi dist, Au

WEBB, H L & CO
Box 68, Fairbanks
DRIFT MINE at Chandalar, Au
Under dev

WEBFOOT MINING & MILLING CO
400 New World Life Bldg, Seattle, Wash
Pres & engr: James M McDonald
Dirs: Edward M Brooks, Charles S Anderson, Bill Holgerson, Petrus Pearson, Jr
WEBFOOT MINE, Palmer, underground, Au
Under dev

WETTACK, SHELDON
431 S Grand Ave, Los Angeles, Calif
PLACER MINE on Long & Nolan Creeks, Ruby dist, Au

WHITEHEAD, FRED
Fairbanks
PLACER on Chicken Creek, Forty-mile dist, Au
Lessee: Franklin Mng Co

WILBUR CREEK MINES
Livengood
PLACER on Wilbur Creek, Tolovana dist

WILDT, FRED
90x 163, Fairbanks
PLACER MINE on Homestake Creek, Au

WILLIAMS MINING CO
Box 1190, Fairbanks
PLACER MINE on Gilmore Creek, Fairbanks dist, Au

WILSON CREEK MINING CO
Anchorage
Pres: W M Curdy
Dir: H C Bennett
MINE at Elephant Gulch, Au, Ag
A I Erickson, gen mgr
A J Erickson, purch agt & mine supt
Idle

WINDERS, J H
Haycock
PLACER MINE on Sweepstake Creek, Koyuk dist, Au

WIRUM BROS
Box 481, Nome
PLACER MINE on Niukluk River, Kougarok dist, Au

WITHROW, A W
Fairbanks
PLACER MINE on Koyukuk River, Koyukuk dist, Au

WOLF CREEK MINING CO
Box 141, Fairbanks
Pres: Andrew Anderson
Gen mgr: Norman Gustavson
PLACER MINE near Fairbanks, 2,000 yd dragline dredge, hydraulic, Au
Mannie Olson, gen supt
Under dev

XAVIER, HENRY & SOLVEIG
8005 Pacific Ave, Tacoma, Wash
PLACER on Goldrun Creek, Fairhaven dist

YUKON CORP
Box 1835, Fairbanks
Pres: W H Coffman
Gen mgr: C A Sherman
Mgr: G H Porter
Purch agt: J Leger
PLACER MINES: Standard Miller, Totatlanika, Eva Creek, Hutchison Creek, Placer, Royal Flush, Gilmore Dome, & Fox Bar
Au, Ag, Pt
BUCKET DREDGE at Fox Bar
C E Smith, mine supt
E C Hulburt, asst mine supt
J Strickland, mine fore
Corniel A Sherman, engr
M J Nugent, mech engr
Floyd Trunnell, electrician
FLOT MILL at Gilmore Dome
M J Newby, mill supt
I H Robertson, asst mill supt
A G Huber, mill fore

YUKON MINING CO
Kako Landing
KAKO CREEK PLACER near Stuyahok, Au
2½ cu-yd dragline & wash pl
Operators: Joseph Ranstad & Bros

YUKON PLACER MINING CO
Box 1108, Fairbanks
Partners: Chas F Herbert, Earl Ellingen, L J Stampe, Glen Franklin, & Harold Schmidt
PLACER MINE on July Creek, Nation, Au
60-MILE OPERATION, placer mine at Glacier Creek, Yukon Terr, dozer & hydraulic
Dozer-Hydraulic Operation on Canyon Creek, near Boundary, 40 mi dist

ZAISER, CLARENCE
Ruby
PLACER MINE on Spruce Creek, Ruby dist, Au

ZIMMERMAN MINES
Fairbanks
Owner: A A Zimmerman
PLACER MINES on Independence Creek near Miller House, Circle Dist, dragline, hydraulic, Au

ARIZONA

A-D-E CONTRACTING & DEV CO
Box 506, Patagonia
BULL SPRINGS GROUP, Santa Cruz co, Zn, Pb

ABRIL MINE
(see Shattuck Denn)

ADVENTURE MINE
1120 Grand Ave, Phoenix
Mgr: Louis Upman
Fluorspar
Under dev

AGNEW, W N
Prescott
DUTCHMAN MINE, Yavapai co, Groom Creek Rt

AKREN MINES
2207 N 24th St, Phoenix
Pres: Joseph A Akren
Gen mgr: Fred Jenkins
PIONEER MINE, 20 m E of Florence, underground & open-pit, Au, Ag, Cu, Pb
Chas Deal, assy
Under dev

ALDINGER, ADOLPH & FRED
Bisbee
DARKNESS CLAIM, Cochise co, Pb

ALEXANDER, T W
Box 299, Prescott
J S GROUP, Yavapai co, Pb Zn

ALEXANDER, VERDIN
Box 142, Humboldt
LOOKOUT MINE, 2½ mi W of Humboldt on the Silver Belt Vein, Au, Ag, Pb, Zn
Owner: Rable Estate
MOUNT ELLIOTT MINE, 7 mi W of Humboldt
Au, Ag, Pb
Gen Mgr: Robert Tucker

ALLEN, MARIE M & R E
Box 73, Crown King
WHISKEY FUND MINE, Yavapai co
Under dev

ALLEY & HODGE
c/o G T Alley, Box 155, Ajo
65 MINE, Pima co
Under dev

ALLISON STEEL MFG CO
Sahuarita
Mgr: W L Allison, Sr
PEACH MINE, Pima co, open-pit, Cu
SHELDON MINE, Yavapai co, underground, Au, Ag, Cu, Pb, Zn

ALVARADO, LUIS
Hayden, (lessee)
ALVARADO CLAIMS #1-6, Gila co, Cu

AMERICAN SMELTING & REFINING CO
120 Broadway, New York City, N Y
(For Officers see Eastern Listing)
WESTERN MINING DEPT, SOUTHWESTERN DIV, 813 Valley Natl Bldg, Tucson
F V Richard, mgr
L H Chapman, asst mgr
L K Wilson, ch geol
TRENCH UNIT, Patagonia, Ariz
underground, Pb, Zn
W C Waidler, supt
200-TON FLOT MILL
HAYDEN PLANT, Hayden, Ariz
1,200-TON CU SMELT & CONV
F J Downey, supt
SOUTHWESTERN ORE PURCH OFFICE, 810 Valley National Bldg, Tucson
Reed F Welch, mgr

APACHE VANADIUM
180 E Bailey St, Globe
APACHE VANADIUM MINE, 8 mi N of Globe, underground, Pb, Au, Ag

ARIZONA ANTLERS MINING CO
602 Beason Bldg, Salt Lake City, Utah
Pres: F F Hintze
ANTLERS MINE, Box 67, Yucca, Au, Ag, Cu, Pb, Zn
R J Dalton, engr
500-tons monthly prod

ARIZONA BARITE
Box 826, Mesa
Pres: Geo O'Leary
Mgr & Purch Agt: Wm F Paine
Dir: E H Robertson
Mine Foreman: Clark Everett
Mill Foreman: Larry Mathis
Assayer: Thomas Gray
Underground Barite mine
100-TON FLOTATION MILL

ARIZONA CHRYSOTILE ASBESTOS
Dominion Hotel Bldg, Globe
Pres: Charles E Hunziker
Gen mgr & Purch agt: G B Gulledge
Secy: H A Twitty
REGAL ASBESTOS MINES, Box 328, Globe
D E Brown, mine & mill supt
Frank Sanchez, asst mine supt
Robert Leturno, asst mill supt
D W Jaquay, engr
25 tons daily prod

ARIZONA CONS GOLD & COPPER MINES CO
Florence, Cu
Mgr: John F Johnson
Under dev

ARIZONA METALS CO
Box 1266, Kingman
Pres & gen mgr: Ralph R Langley
SUMMIT ALPHA MINES, Kingman
Au, Ag, Cu, Pb, Zn
C G Patterson, mine supt
W D Green, eng
C D McGovern, mine foreman
J W Jefferies, Assayer

ARIZONA MINING CORP
Chloride
Secy: F H Luhrs, 17 John St, New York 7, N Y
SAMOA GROUP, Mohave co, Pb, Zn

AROS, JOSEPH & LOUIS RAMIREZ
Wickenburg, (owners)
RIVER SIDE PLACER, Yavapai co, placer, Au

ASBESTOS CORP OF AMERICA
P O Box 328, Globe
Pres: Chas E Hunziker
VP, Dir, gen mgr: Grady B Gulledge
Gen supt: C H Salmon
RAGALASBESTOS MINES & ARIZ CHRYSOTILE MINES, 50 mi NE of Globe, underground, open-pit, Asbestos
25-TON GRAVITY MILL
25-tons prod daily

ASH PEAK LEASE
Box 208, Duncan
COMMERCE & SHAMROCK MINES, Ag
Howard Mottier, gen mgr
100-tons daily prod

ASSOCIATED MINING CO
Aguila, (lessee & operator)
RIO VISTA MINES, Yuma co
BULLARD GROUP, Yavapai co, underground, Au, Cu
Under dev

ATHLETIC MINING CO
Box 792, Safford
Pres: Raymond F. Orr
VP: Harvie L Horton
Sec & treas: Ander K Orr
Gen mgr: Harvie L Horton
Purch agt: Harvie L Horton

IRON CAP, HEAD CENTER & GRAND CENTRAL MINES, 12 mi NW of Klondyke, underground
Au, Ag, Cu, Pb, Zn
Albert Bosworth, mine engr
F A Miller, mech engr
Rudolf Sturm, met
Ervin Kuykendall, Assy
Robert Sayer, mine supt
Walter Fulmer, mine fore
Rudolf Sturm, mill supt
150-TONS FLOT MILL

ATTEMPT MINING CO
Mgr: Ed S Howell, Box 66, Bagdad
ATTEMPT MINE, Yavapai co, Pb
Under dev

AUSTIN, L C
1427 W 16th St, Los Angeles 6, Calif
ARIZONE MINE, Mohave co, Zn, Pb
Under dev

BAGDAD COPPER CORP
Bagdad
Pres: J C Lincoln
Gen mgr: Ernest R Dickie
Gen supt: J H Cazier
Purch agt: Wm I Bergen
Olaf Houdrun, mine supt
E G Green, mill supt
T A Smith, asst mill supt
George W Culville, engr
Sam Payne & H T Stewart, mine fore
Harry Mullins, H E Wallen, & Al Skinner, mill fore
Emmett Foltz, mech engr
W D Deacon, elec engr
Edward S Howell, met
John B Campbell, assy
OPEN-PIT COPPER MINE, 70 mi W of Prescott, 3500-tons daily prod
3500-TON FLOT MILL

BAILEY, W J
Tempe
TOM THUMB #108 MINE, Pinal co, Au

BAKER, EPH
Box 64, Wickenburg
SAND HILL PLACER MINE, Yavapai co, Au

BARCLAY, ROSS
Washington Camp
STELLA LOUISE MINE, Santa Cruz co, underground, Zn, Pb, Cu

BARKSDALE, DON
Imlay, Nev
HILLSIDE MINE, Wallapai dist, Pb
Owner: W C Babcock, Kingman

BATTLE SPRINGS ASBESTOS CO
Young
Mgr: D Brewer
Operations in Gila co, underground, Asbestos

BEAR CANYON MINE
San Carlos
Lessee: R G Robertson, 1417 E McDowell Road, Phoenix
MINE & MILL in Gila co, underground, asbestos

BENNETT, FRED A
Vail, (lessee)
ROSEMONT MINE, Pima co, underground, Cu, Pb, Zn

BENSON, NORMAN J & K C MOON
1119 E Avenue, Douglas, (owners)
LUCY BELL MINE, Cochise co
Under dev

BIRD, E E
Star Rt, Patagonia
BLUE BIRD MINE, Santa Cruz co, Pb

BLACK CANYON COPPER CO, INC
c/o James W England, Jr, Box 1581, Phoenix
KAT COPPER MINE, Rocksprings, underground, Cu

BLAKEMORE, PAGE
Hanover, New Mex
DOUBLE EAGLE CLAIMS, 25 mi SW of San Simon, underground, Au

BLAND MINE
Tyndall dist, Santa Cruz co
Operator: Ross Barclay, Patagonia, Cu, Pb, Zn

BLUE COPPER MINE
2241 N 7th St, Phoenix
Mgr: Phil Hickey
Mine near Superior, Cu
Under dev

BONANZA MINING CO
Wenden
Pres & mgr: Roy H McDonald
MINE in Yuma co, underground, Au, Cu
Supt: Dan Dawson

BOTT, GEORGE H
Box 56, Willcox
BOTT MINES, Aravaipa mng dist, Klondyke
Zn, Pb, Ag, Au
Under dev

BRAATHEN, ARNT T
Box 22, Amado
BRAATHEN GROUP, Santa Cruz co, Zn, Pb

BRADY, L R
140 W McArthur St, Tucson
MILL TOP CLAIM, Pinal co
Under dev

BRINT, M W
Cleator, (lessee)
GOLDEN TURKEY GROUP, Yavapai co, Au, Pb

BROWN, J W
155 Pasadena St, Mesa, (part owner)
EL CAPITAN MINE, Gila co, Ag

BROWN, R L
Box 182, Patagonia, (operator)
BLUE NOSE MINE, Santa Cruz co, underground, Pb, Ag

BUCKEYE MICA CO (BUCKEYE MILLS)
Box 416, Buckeye
Pres, gen mgr, & purch agt: H G Smith
VP, gen & mill supt: Walter L Tocco
BUCKEYE MINE, 4½ mi S of Buckeye
PEEPLES VALLEY MINE, 12 mi NW of Peeples Valley
Underground, open pit, Sericite, Muscovite, Be
Bob Burns, Mine Supt
Wayne Watts, Mill fore
GRAVITY MILL
2,400 tons mica yearly prod

BYWATER, CAL
Box 1679, Globe, (owner)
ROUND TOP #6 & 7, Gila co, Au

C L & P CORP
Secy-treas: T J Puryear, 225 N 1st Ave, Tucson
NEW YEARS EVE MINES #1-4, Pima co, Cu
Under dev

CALARI MINING CO
406 Kress Bldg, Long Beach 12, Calif
Pres: L F Albrecht
Gen mgr: C D Shedenhelm
Mgr & purch agt: L F Albrecht
RUTH MINE, Box 182, Prescott
W F Bullis, mine supt
Under dev

CALIFORNIA STEEL PRODUCTS CO
Treas: c/o C F Fannin, Richmond, Calif
SILVER BELL of COLUMBIA MINES, Martinez Canyon dist, Pinal co, Pb

CAMP B COPPER MINE
Box 392, Wickenburg
Pres & mgr: Emmet Hutter, Wickenburg
Secy-treas: Hollis B Gray
VP: John Perkins
VP: Lloyd C Miller
Au, Cu
George Criswell, purch agt
J D Keenan, supt
Edwin Kephart, mine supt
Jack Nutter, mill supt
Under dev

CAMP BIRD MINE
Wagoner
CAMP BIRD MINE, 5-7 mi SW of Wagoner
Underground, Au, Ag, Pb
Owner: Harold B Sims

CAMPBELL, GEORGE W
Box 701, Salmone
BLUE EAGLE or BUNKER HILL MINE, Yuma co
Au

CAMPBELL, S T
Box 1841, Prescott
COLDWATER MINE, Yavapai co
Under dev

CANADA DEL ORO MINE
Oracle, Tungsten
Mgr: James McAvoy
Under dev

CANYON DEL ORO MINES
2422 N Balboa Ave, Tucson
Gen mgr: R A Burney
AMPHITHEATER MINE, 31 mi N of Tucson & 6 mi S of Oracle
Underground- Pb, Zn, Cu
FLOTATION MILL
15-tons prod daily
Under dev

CARLOTTA COPPER CO
530 W Latham, Phoenix
Pres: John L Alexander
Cu

CASA GRANDE PERLITE COMPANY
Casa Grande
Pres: Charles M Vaugn
VP: Guy Gilbert
Treas: Melvin C Jensen
Mill supt: H H Matchett
40 cu yds prod daily

CASIAS, TOM
Box 1065, Hayden, (lessee)
CHILITO MINE, Gila co, Cu
Under dev

CASON, VAL
Ruby Star Rt, Box 43, Tucson
MIDNIGHT MINE, Santa Cruz co, Pb
Under dev

CASTLE DOME COPPER CO
61 Broadway, New York 6, N Y
Pres: Sam A Lewisohn
VP: E H Westlake & J G Greenburgh
Purch agt: E J Morse & F L Bishop
Gen mgr: R W Hughes
Gen Supt: J W Still
CASTLE DOME COPPER CO INC, Box 100, Miami, 10 mi W of Miami, open pit, Cu Concentrate
J E Powells, geol
C B Hostetler, mine eng
J J Luchessa, mech supt
E B Morf, elec engr
C H Curtis, met
G R Warren, Assy
J C Van De Water, mine supt
R L Mountjoy, mill supt
L W Bowling, master mech
12,000-TON FLOTATION MILL

CEDAR TALISMAN CONS MINING CO
21 Stock Exchange Bldg, Salt Lake City 1 Utah
Pres & gen mgr: J Walters, Jr
Secy-Treas: A J Selander
FRENCH LILY MINE, Box 1548, Prescott
Au, Ag, Cu, Zn
60-TON FLOT MILL

CENTROID CONSOLIDATED MINES
Box 312, Salome
Pres: W B Harris
Dir: R W & J J Harris
CENTROID, JUBILEE, HANCOCK & BLACK HAWK MINES near Wenden
Under dev

CHANCE MINE
Box 137, El Frida
Mgr: J F Rydbaum
MINE in Cochise co, underground, Pb, Ag

CHARLESTON LEAD MINES CO
P O Box 347, Tombstone
Gen mgr: Charles H Suiter
MARY JO MINE, Box 347, Tombstone, Ag, Cu Pb, Zn
5-TON GRAVITY MILL
CHARLESTON LEAD MINE, Tombstone, Pb, Ag

CHARLESTON MINING CO
Tombstone
Mgr: William Catron
MINE in Cochise co, underground, Zn, Pb, Ag

CHEMI-COTE PERLITE CORP
P O Box 5187, Phoenix
Pres: L L Young
VP: Wm J Merrifield
Exec dir: Fay Young MacDonald
MARY T & SANDY #2 MINING CLAIMS, 3 mi SW of Superior, open pit, perlite
J A Wellington, mine supt
L A GeBauer, cons chemist
CRUSHING PLANT, capacity 100 tons daily

CHILSON, RICHARD E
P O Box 2729, Tucson
KING-EXILE MINE, 18 mi E of Sahuarita, underground, Cu, Ag
200-tons prod monthly

CHRISTMAS COPPER CORP
Box 679, Globe
Mine 6 mi NE of Winkelman, Cu
500-TON MILL
COCREHAM, STEVEN & RICHARD, Globe
LEAD QUEEN MINE, Pinal co, Pb, Au

CLARK, E
Miami
GIBSON MINE, Gila co, underground, Asbestos
KEYSTONE MINE, Gila co, underground, Cu

CLARK, JOHN A
Box 659, Globe, (owner)
VINDICATOR MINES #1, 2, 3, 4, 7, Gila co
Under dev

CLARKE, PHIL J
Box 452, Nogales
BIG STEVE MINE, Santa Cruz co
Under dev

CLEMO, FRED
Globe
COPPER HILL GROUP of OLD DOMINION, Globe, Miami dist (owned by Miami Copper Co)
Cu

CLIMAX MINING & DEVELOP CO
Box 42, Quartzite c/o L A Aplington
Pres: L H Bachner
Gen mgr: L A Aplington
CLIMAX PROPERTIES, Box 355, Bouse, Au, Ag, Cu, Pb
Idle

COCREHAM, STEVE
Box 679, Globe
LEAD QUEEN #1 & 2 MINES, Pinal co, Pb
Under dev

COHEN TUNGSTEN MINE
Wilcox
Pres: A G Cohen
Gen mgr: F W Clark
COHEN TUNGSTEN MINE, 14 mi from Wilcox, underground, placer

COLBURN, E A JR
Box 153, Congress
CONGRESS MINE, Yavapai co Au

COMSTOCK EXT MINING CO
Secy: B T Dick, 406 N 7th Ave, Phoenix
DOUGHBOY GROUP MINE, Gila co, Cu
Under dev

CONSOLIDATED COPPERMINES CORP
120 Broadway, New York 5, N Y
(For officers, see Nevada listing)
Exploration work at Lone Star mine, Safford

CONSOLIDATED FELDSPAR CORP
P O Box 229, Kingman
Pres: R W Lawson
Gen mgr: Ed Boone
OPEN PIT MINE, Feldspar & Sillica
80-ton grinding pl
Paul Willis, purch agt
L D Gregory, mine & mill supt
Paul Hodges & S B Wooten, mine fore
E W Koenig, Assy

COPPER BASIN
Drawer 827, Prescott
Gen mgr: Fred D Schemmer
Cu

COPPER BELT MINING CO
Aguila
Mgr: H K Thomas
Copper mine 20 mi S of Aguila
Preparing to diamond drill

COPPER BUTTE MINE
Box N, Ray
Mgr: C F Mitchell
Cu

COPPER KING MINE
Bagdad
(See Goodwin Mng Co)

COPPER ROSE MINE
Oracle
Mgr: R A Burney
Cu

COPPER WORLD MINE
(See Dye & Bathrick)

CORONADO COPPER & ZINC CO
1206 Pacific Mutual Bldg, Los Angeles 14, Calif
Pres & gen mgr: Roy W Moore
VP: Henry T Mudd
Purch agt: A L Davidson
REPUBLIC MINE, 6½ mi N of Dragoon, underground, Zn, Cu
Arthur Baker III, geol
William C Hamilton, assy
Fred E Gray, mine mgr
Hugo Miller, mine engr
Burnett R Gibbens, mine fore
L D Yundt, mill supt
200 TON FLOT MILL

CORONATION MINING CO, INC
Box 387, Bouse
Pres: Charles Milton
VP: L A Linebaugh
Secy: Herman S Schneider
Treas: E O Northbrook
CORONATION MINES #1 to #74 Inclusive, Bouse, Au, Ag, Cu
All properties to be lessee operated

COYOTE HOLE MINE
Sells
TUNGSTEN MINE in Pima co

CROWN POINT MINING CO
P O Box 691, Globe
Pres & gen mgr: C F Moores
MAY SILVER LEAD MINE, 35 mi SW of Globe, underground, Pb, Ag
R E Douglas, mech engr
FLOT & GRAVITY MILL

DAVIS, ROBERT
Phoenix
OAKLAND MINE, Yuma co, Au

DAYLIGHT MINE
Helvetia dist, Pima co, Cu, Zn
Operator: F A Bennett, Tucson

DE LA FOUNTAINE MINE
Wallapai dist, Zn, Pb
Operator: A W Smith, Kingman

DE LA OSSA, ABEL
Washington Camp
DOUBLE STANDARD MINE, Santa Cruz co, underground, Zn, Pb, Cu

DEL PASCO MINING CO
Crown King
Owners: Lawrence DeZee, & Hugh F Campbell
Mgr: Hugh F Campbell
DEL PASCO MINE, 7 mi NW of Crown King, underground, Au, Pb, Ag, Zn
Idle

DESERT LEAD CO
Yuma
Pres & mgr: W D Morrison
RIALTO MINE, Castle Dome dist, Yuma co, underground, Pb, Ag
300-TON MILL

DONNELLEY & HENNING
Box 472, Superior, Pb

DORSEY & GREGERSON
c/o Claude Dorsey, 108 Perkins St, Nogales
CONCEPCIONES MINE, Pima co
Under dev

DUQUESNE MINING CO
c/o A R Byrd, Jr, Tucson
DUQUESNE MINES, Santa Cruz co, Cu, Pb, Zn

DYE & BATHRICK
Box 1069, Kingman
Partner-owners: R L Dye & J H Bathrick
BORIANA MINE DUMP, Yucca W
COPPER WORLD MINE, Box 68, Yucca, Ag, Cu, Zn
20-ton prod
TIN CUP MINE, Kingman, Au
Under dev
100-TON GRAVITY FLOT MILL UNDER CONSTRUCTION
Under dev

EAGLE-PICHER MINING & SMELTING CO
First Natl Bank Bldg, Miami, Okla
Ch of bd: J M Bowlby
Pres: Elmer Isern
VP: D C MacKallor
VP, secy, treas: Carl A Geist
VP & compt: William R Dice
OFFICE of WESTERN OPERATIONS, Box 231, Tucson
Mgr: Grover J Duff
SAN XAVIER MINE, San Xavier, Zn, Pb
SAHUARITA MILL, 500-TON FLOT, Sahuarita, Pb, Zn
Leon F Bayer, mine supt
Verne W Winters, mill supt
Treating Co & custom mlg

EIDEN & McCREA
Box 635, Tombstone
BROTHER GEORGE MINE, Cochise co, Zn, Pb

EMERALD ISLE COPPER CO
Kingman
EMERALD ISLE MINE, Wallapai dist, Mohave co
Owner: C F Weeks, Kingman, Cu
400-TON LEACHING PL

EPLEY, ED & W A HICKS
Portal, (owners)
SILVER HILL GROUP, Cochise co, Pb

ERICKSON, GEORGE
Box 2231, Warren
LUCKY SWEDE MINE, Cochise co
Under dev

ERKLANS, JOHN
Box 1022, Hayden
OLD SAMPLE MINES, Pinal co, Ag

ESCAPULE, JOE M
Box 243, Tombstone
GARNET #1-12 MINES, Cochise co
Under dev

FARO BANK GROUP
Sells (Address Tucson)
Owner & gen mgr: S B Owens, Box 769, Tucson, Au
Under dev

FARRINGTON, L L
Box 62, Cave Creek
EDWARDS CLAIM, Maricopa co, Au

FERNSTROM & CO
Tucson
LAS GUIJAS MINE & MILL at Las Guijas, x
L G Fernstrom, mgr
Under dev

FINLEY, R C
195 E Mesquite St, Globe
BOBTAIL GROUP, Gila co, Cu

FISHBACK & GOETZ
Hayden Junction
KULLMAN-McCOOL MINE, Banner dist, Cu, Pb

FLUORSPAR PRODUCERS CORP
9501 Washington Blvd, Culver City, Calif
Pres: A W Fredrickson
VP & gen supt: Joffre Marcil
Secy-treas: W M Jacobs
LONE STAR FLUORSPAR MINES, 11 mi SE of Benson, underground, Fluorspar
Frank B Wicks, Los Angeles, Calif, mine engr, mech engr & safety engr
Smith-Emery Co, Los Angeles, Calif, sec & assy
J Marcil, mine supt
J Donohoe, asst mine supt
W Judd, Al Green & H Bohrman, mine shift bosses
10-ton prod daily

FORBES, ALBERT W & DENVER F
116 Washington St, Tucson
FORBES MINE, Pima co, Zn, Pb

FOURTH of JULY MINE
Duncan
Mgr: R T Ellis
Fluorspar
Under dev

FRITZ, OTTO L
Health Dept, Tucson, (owner)
RICHARD & RICHARD #1 MINE, Gila co, Cu

GALBRAITH, ROY
426 N Robson, Mesa
TREASURE CHEST MINE, Maricopa co
Under dev

GALLAGHER VANADIUM & RARE MINERALS CORP
Box 77, Tombstone
Mgr: J B Gallagher
BRONKOW MINE, near Tombstone, underground, Pb, V, Au, Ag
Under dev

GARCIA, ERNEST
Box 175, Oracle, (lessee)
SOUTHERN BELLE MINE, Pinal co, Au

GEMMILL, MARK
Prescott, (lessee)
SENATOR GROUP MINE, Yavapai co, Zn, Pb

GEROLD, CHARLES & FRED
S 6th Ave, Tucson
CALAMINA MINE, Pima co, underground, Pb, Ag, Cu
Owner: Antonio Zambonini

GIACOMA BROS
Box 546, Tombstone
Mgr: A P Giacoma
INTERVENOR MINE, Au, Ag
SAN PEDRO MINE, Tombstone dist, Au
GRAND CENTRAL TAILING DUMP, Tombstone dist, Ag, Pb

GILA ASBESTOS CO
Globe
Owners & operators: E S Phelan, O M Marshall & George Kohl
PLEASANT VALLEY, Asbestos

GLADIATOR MINING CO
c/o E M Moores, Jr, Crown King
Mine in Pine Grove dist, Yavapai co, underground, Au, Ag
100-TON FLOT MILL

GLOBE ASBESTOS CO
Box 606, Globe
Pres & mgr: Grady B Gulledge
Dir: C E Hunziker
APACHE ASBESTOS MINES, PINE TOP MINE, Box 1241, Globe, underground, Asbestos
C Salmon, mine & mill supt
D W Jaquays, engr
FLOT MILL
15-ton prod daily

GLOBE-LOS ANGELES MINING CO
Globe
Pres: Henry Mulryan
CANADIAN GROUP of CLAIMS, 40 mi N of Globe
Asbestos

GOLD NOTE MINE
Silver Mt Dist, Yavapai co, Pb
Operator: R E Logan, Wagoner
Under dev

GOLDEN GEM MINE & MILL
Box 66, Kingman
Gen mgr: A W Clapp
Dir: J F Williams
Secy-treas: O D Stowell
GOLDEN GEM MINE, Cerbat, underground, Au, Ag, Pb
W J Howard, mine & mill supt
V W Howard, engr
30-TON FLOT & GRAVITY

GOLDEN HOPE MINE
Sleeping Beauty dist, Pinal co, Globe
Operator: Kinney Scarborough, Apt 3, Crawford Court, Globe
Operators: Hewitt Wolfe & Geo Ruiz, Box 2138, Globe

GOLDFIELD MINING CO
c/o Alfred Strong Lewis, Star Rt, Mesa
GOLDFIELD MINES, Pinal co, Au

GOLDFIELD MINES SYNDICATE
Mesa
Owner: Hugh Nichols
Mgr: Thomas R Russell
GOLDFIELD MINE, NE of Mesa, near Apache Junction, open pit, Au
125-TON CYANIDE MILL
Prod: 125 tons daily

GOMEZ, CY & MANUEL
Morenci
BELL GROUP MINE, Greenlee co, Au, Ag

GOOD ENOUGH MINING & MILLING CO
650 S 4th Ave, Tucson
UNDERGROUND MINE at Las Guijas near Arivaca, W
J Arthur Zappia, mine fore & purch agt
Guido A Alaprandini, mine supt & mill fore
24-TON GRAVITY MILL
Under dev

GOODWIN MINING CO
Bagdad
Owner, pres & gen mgr: Ernest R Dickie
COPPER KING MINE, underground
Lessee: E A Scholz & J H Cazier
25-tons prod daily
COPPER QUEEN MINE, underground
25-tons prod daily
Lessee: Mike Lawler, Hillside
OLD DICK MINE, underground
50-tons prod daily

PINAFORE & CUPRIUM MINES
Under dev
All mines worked by leasors
Mines within 25 mi of Bagdad
Cu, Pb, Zn, Au, Ag

GRANITE BUTTE MINE
Chloride
Owners & operators: Elmer, Harold & Robert Thorsten
Ag, Pb
Under dev

GREAT LAKES CARBON CORP
18 E 48th St, New York, N Y
(for officers, see New Mexico listing)
SNOW WHITE MINE, Superior, Ariz, perlite

GREENSHAW, LESLIE
Box 207, Florence
TROXEL GROUP, Pinal Co, Pb
WEDGE MINE, Pinal Co, Pb, Zn
Under dev

GRIFFIN, BEN F
675 S Duncan Ave, Los Angeles 22, Calif
McCRACKEN MOUNTAIN GROUP MINES, 67 mi S of Kingman, Arizona, underground, Pb, Ag
Lessees: Albert & Harry Bauer, Las Vegas, Nevada
FLOT MILL
Limited prod

GRIFFITH & KRAMER
c/o Archie Griffith, Patagonia
WORLD'S FAIR MINE, Santa Cruz Co, Pb
Under dev

GROVE & SONS MINING CO
202 N Pleasant St, Prescott
Mgr: Harry K Grove
ORO FLAME & OHIO MINES, Yavapai co, underground, Au, Ag, Pb
Under dev

GROZIER, THOMAS F
Box 787, Kingman
AMERICAN NETTIE MINE, Mohave co
Under dev

GYPSUM MINE
Winkelman
Mgr: J S Tillman

H & H MINING CO
Kingman, Sandy Route
Gen mgr: Earl Heath
MARY NEVADA MINE, underground, Ag, Pb, Au
Ray Parr, mill supt
Sheldon Heath, fore
40-YD GRAVITY OPERATION
20-ton prod
Under dev

H & M MINING CO
Crown King
Gen mgr: C F Moores
GLADIATOR MINE, 3½ mi N of Crown King, underground, Au, Ag, Cu, Pb, Zn
Harrison Smith, mine fore
FLOT MILL
20-tons daily prod

HAGEY, J H & J D
Box 205, Chloride
J & J GROUP CLAIMS, 10 mi E of Chloride, underground, Au, Ag, Zn, Pb, Cu
HAGEY GROUP, 5 mi from Chloride, underground, Au, Cu
GOLD NUGGETT & SILVER TIP MINES, 10 mi E of Chloride, underground, Cu, Au, Ag, Pb
Under lease to J D Hagey
Some prod

HALL, R G
Chloride, (operator)
OTSEGO MINE, Mohave co, Pb
Under dev

HARPER MINE
Star Route, Patagonia
Mgr: Dean Mori
W

HAUGHT, SAMUEL A, JR
Box 43, Young
WILD BULL MINE, GILA CO
Under dev

HELVETIA MINING CO
Box 926, Tucson
Owner R B Blankenship, 298 Granada St, Tucson
42 CLAIMS IN HELVETIA MNG DIST, Underground, open pit operations, Ag, Cu, W, Mo
Under dev

HENDERSON, MRS A S
Patagonia, (owner)
MINERAL MINE, Santa Cruz co
Under dev

HENDERSON, RALPH
Klondyke
BEN HUR MINE, Graham co, underground, Pb, Zn

HERRAN, JAMES, JR
Box 646, Superior, (lessee)
LAKE SUPERIOR & ARIZONA GROUPS MINES, Pinal co, Au

HILL, FRANK
Box 8A, Ruby Star Rt, Tucson
ARIZONAL #3 MINE, Pima co, Ag, Pb

HILLSIDE INVESTMENT & MINING CO
2801 Oracle Rd, Tucson
Mgr: C F Weisman, Oracle
GRAND VIEW MINE, Pinal co, underground, Au, Ag

HILLSIDE MINING & MILLING CO
Bagdad
Pres: J C Lincoln
VP & gen mgr: Ernest R Dickie
Secy-treas: George Colville
HILLSIDE MINE, Au, Ag, Pb, Zn
E C Green, purch agt & gen supt
E E Snellenberger, mine supt
Mark Campbell, mill supt
J B Campbell, assy
250-TON FLOT MILL
75-tons prod daily

HILTON, E P
Box 1308, Tucson
STATE of MAINE GROUP & LONE MOUNTAIN GROUP, Pb, Ag, Au
15-TON GRAVITY MILL
40-tons prod monthly

HORSE SHOE MINING CO
Mgr: J D Merrill, 235 Adams Hotel Bldg, Phoenix
HORSESHOE MINE, Graham co
Under dev

HUFFAKER, VERN J
Yaeger via Dewey, (operator)
SHYLOCK MINE, Yavapai co, Cu

HULSEY & HALL
c/o George R Hall, San Simon
DOUBLE EAGLE MINE, Cochise co, Au
Under dev

HUNTER, PAUL L
Dragoon
MOORE SHAFT, Cochise co, underground, Cu, Zn

HURLBUT, W C
Greaterville
SILVER LEAD & QUEBEC MINES, Pima co
Under dev

HUSTED, WORD & DAVIS
Box 589, Globe
MORNING STAR #4 MINE, Stanley Dist, Cu

INSPIRATION CONSOLIDATED COPPER CO
25 Broadway, New York City 4, N Y
Pres: W D Thornton
VP & gen mgr: F D I Honeyman
Gen mgr asst: C G Stunz
Gen supt: H C Weed
Asst purch agt: E F Dolin
Personnel mgr: M A Smith
Audit: W J Horan
INSPIRATION CONSOLIDATED COPPER CO, Inspiration, Cu
J R Watts, mine supt
B B Whitney, asst mine supt
C D Huffine, chief mine engr
C O Cunningham, gen mine fore
H R Burch, gen pit fore
H F Adams, mill supt
S E McNeil, gen mill fore
A J Gould, leaching-pl fore
W R Dininger, acid-pl fore
C B Kettering, Leaching-pl supt
A H Neal, mech engr
E L Hart, master mech
T E Tizard, ch engr, power pl
FLOT MILL, LEACH PL & ELECTROLYTIC REFINERY

INTERNATIONAL MINING EXCHANGE
c/o J B Johnston, Jr, Box 418, Glendale
MYSTERY MINE, Yavapai co
Under dev

INTERNATIONAL SMELTING & REFINING CO
Miami (Subsidiary of Anaconda Copper Mng Co)
Supt: Harold Foard
Ore Buyer: Clifton E Smith
3,000-TON CUSTOM Cu SMELTER

IRON KING MINE
(see Shattuck Denn)

ISBELL CONSTRUCTION CO
Ray
Mgr: Guy V Isbell
MINE in Pinal co, open-pit, Cu

J L MINING CO
Bumble Bee
Mgr: W S Ballard
MINE in Yavapai co, underground, Au

JANES MINE
Box 415, Bisbee, W
Lessee: F A Montgomery
Small prod

JANE PLACER
In Big Bug Dist
Operator: E R Matson, Mayer

JEFFERSON MINE
Patagonia
Gen mgr: R L Leiscaux
Mine in Alto Dist, Au, Pb
Operators: Nuttal & Snyder

JOHNSON MINING CO
Mgr: A H Johnson, Box 19, Kelvin
BLACK COPPER GROUP MINE, Pinal co, Cu

JOHNSON, ROSE H
Box 661, Salome
HARQUA HALA EXT GROUP MINE, Yuma co
Under dev

K & H MINING CO
Box 938, Prescott
Partner-Owners: Ike Kusisto & T E Harper
SACRAMENTO MINE, Prescott, Au, Ag, Cu Pb, Zn
Edward Fegert, mine foreman

KELLIS, EDGAR
Bagdad
OLD DICK MINE, Yavapai co, underground, Pb, Zn, Cu

KENNECOTT COPPER CORP
(for general officers, see eastern listing
RAY MINES DIVISION, Ray
Gen mgr: R W Thomas
Asst gen mgr: W I Garms
ACCOUNTING
Div compt: C L Billing, Ray
Ch acct: R C Lewis, Ray
Ch clk: H L Herrmann, Hayden
PURCH & STORES
Asst purch agt: W E Guyer, Hayden
Storekeeper: C F Creamer, Ray
Act storekeeper: E G Stebbins, Hayden
MECHANICAL
Mech supt: J D Sullivan, Hayden
Mast mech: A L Dickerson, Ray
Mast mech: F M Hoskins, Hayden
Ch elec: L J Miller, Ray
Ch elec: C W Dutton, Hayden
MINING, Ray
Open-pit, underground, Cu
Gen mine fore: Ernest Jenkin
MILLING, Hayden
Flot mill
Mill supt: F J Tuck
Asst mill supt: J L Stevens
Met engr: G F Sewell
600 men employed

KENNEDY, JAMES O
Box 9, Kirkland, (owner)
PORTLAND GROUP, Yavapai co, Au

KIRKPATRICK, W H
St Michael Hotel, Prescott
BODIE MINE, Yavapai Co, Pb

KNIGHT, SAM MINING LEASE, INC
Winkelman
Pres: Frank P Knight, Jr
CHRISTMAN MINE, 8 mi N of Winkelman, underground, Cu
100 tons lime fluxing ore daily

KOHL, GEORGE
Box 1593, Globe
Owner: Robert Wells, Tulsa, Okla
REYNOLDS ASBESTOS MINE
Supt: Floyd Brown

KYLE ASBESTOS MINES of ARIZONA, INC
Globe
Owner: Roger Q Kyle
Underground, Asbestos, Chrysolite
2-5 tons prod daily

LARSON, EDWIN MINES
718 Mills Bldg, El Paso, Texas
Mgr: Robert T Mitcham
SCRIBNER MINE, Box 101, Elfrida, underground, Ag, Pb
H C Parrott, mine fore
D W Garcia, mech engr
MOUNTAIN QUEEN MINE, Swisshelm dist, Pb, Zn

LAST CHANCE MINING CO
c/o Morris & Doyle, Douglas
LAST CHANCE MINE, Cochise co

LENNOX-HUGHES SYNDICATE
Mgr: Harry C J Lennox, Box 407, Seligman
LONE JACK & BLACKFOOT MINES, Mohave co
Under dev

LEON, MILTON
208 Wright Bldg, Tulsa 3, Oklahoma
UNCLE SAM MINE, Santa Cruz co
Under dev

LeROY MINE
Box 15, Dos Cabezas
Operator: C W Dorsey
Au, Ag, Pb, Zn

LEVY, BEN
Box 843, Kingman
LEAD PILL MINE, Owens dist, Pb

LIPPINCOTT, R D, L B & J R
Box 642, Salome, (owners)
BIG BOY MINE, Yuma co, Pb
Under dev

LITTLE DOMES MINING CO
Pres: Fred T Smith, 430 S Broadway, Los Angeles, Calif
SONORA GROUP MINE, Yuma co
Under dev

LONE MOUNTAIN MINE
(see E P Hilton)

LONE PINE MINE
In Bug Bug Dist
Operator: Fred Gibbs, Prescott, Cu

LONE STAR MINES, INC
c/o Albert Spaulding, 702 10th Ave, Safford
LONE STAR MINE, 10 mi NE of Safford, underground

LONG, A E
1021 W 101st St, Los Angeles, Calif
WHY NOT, GOLD & CLIPPER GROUP MINES, Yuma co
Under dev

LOOFBORO, L C
Arivaca
SILVER BELL MINE, Pima co, underground, Ag, Pb

LUCAS, C L
Wickenburg
B O A MINE, Yavapai co, Cu

LUCKY LYMAN MINING CO
Yuma
81 MINE im Yuma co
Mgr: Lyman Wall
Pb, Ag
Under dev

LUCKY NO 2
Lordsburg, New Mexico
Gen mgr & lessee: E Forrest
Lessee: McCabe
Mine in Greenlee co, Ariz, Fluorspar

LUCKY TIGER COMBINATION GOLD MINING CO
Mgr: E J Stanley, Parker
EMPIRE ARIZONA MINE, Yuma co, underground, Cu
W W Harriett, supt

MAGMA COPPER CO
Superior (See Newmont Mng Corp, Calif)
Pres: A J McNabb
VP & treas: Henry E Dodge
VP & gen mgr: W F Goss
Asst gen mgr: Darrell Gardner
Purch agt: Frank Sarver
Secy: R C Bonebrake
Asst secy & asst treas: Gus A Mrvicka
MAGMA MINE, N of Superior, underground, Cu, Zn, Ag, Au
J F Buchanan, mine supt
Halder Rex, mill supt
J F Flanagan, asst mine supt & ch engr
C Tomerlin, mine fore
T G Botkin, mech engr
E J Caldwell, smelter supt
J H Rose, gen met supt
W J Swanson, audit
C B Foraker, acting mine supt
F T Davis, met
Howard Johnston, mine master mech
L D Curtis, ch electrician
W W Simon, assy
1 000-TON FLOTATION MILL
34,000 tons prod monthly
24,000 tons smeltered in 1950

MAJALCA & LIZARAGA
Patagonia
GOLDEN GATE MINE, Santa Cruz Co, Pb

MANGANESE KING MINING SYNDICATE
Box 335, Bouse
Pres: Robert W Doyle
VP, secy: Harrison Doyle
Gen mgr: L A Aplington
MANGANESE KING MINE, 35 mi NE of Bouse, open-pit
Under dev

MANIFEE, JACK
Rock Springs
GOLD STANDARD GROUP MINE, Yavapai co, Au

MARIN, ALFONSO A
Box 71, Winkelman, (operator)
JAVONCILLO MINE, Gila co, Au

MARK TWAIN MINING CO
c/o Ike W Kusisto, 410 W Mt Vernon, Prescott
MARK TWAIN MINE, Yavapai co, Ag

MARSTELLER, GROVER
Box 1487, Nogales
HERMOSA MINE, Santa Cruz co, Ag

MARY COPPER MINE
Cleator
Lessee: James H Christensen
Mine near Mayer, Cu, Au
Under dev

MARY G MINE
Box 49, Ruby Star Rt, Tucson
Pres: H D Nygaard
VP: H G Worsley
Secy: J Burmeister
1 car prod monthly, Pb, Ag, Cu, Hg

MAYHEW MINING CO
Yuma
Mgr: Wm Mayhew
BIG JIM MINE in Castle Dome Dist, Pb, Ag, Au, Zn, Cu
Dry concentrator
Under dev

McCARRELL, C A
Sanders, (lessee)
SANDERS MINE, Apache co, open pit, Bentonite
14,000-tons prod monthly

McGEE, R H
Ruby Star Rt, Box 25, Tucson
HIGH HILL MINES #1-6, Pima co, Pb

McLENDON, CARL
Wickenburg, (operator)
HOMESTAKE GROUP MINES, Maricopa co, Au
LUCKY CUSS MINE, Maricopa co, Au

MERLO, FRANK
Los Angeles
Mgr: H A Lackey, Kingman
MICA HILL MINE, Moss Canyon near Kingman, open pit, mica
Under dev

MERRILL, FLETCHER
(Lessee)
Patagonia
MOWRY MINE & HUACHACA GROUP near Patagonia underground, Pb, Ag
Under dev

METEOR SILICA CORP
Winslow
Pres: W A Moeur, 210 Phoenix Nat'l Bank Bldg, Phoenix
Plant mgr: Earl E Pomeroy, Box 191, Winslow
Mine located 16 mi W of Winslow

MEYER, JOHN L
Peoria
GOLD MOUNTAIN MINE, underground, Au, Ag
Under dev

MEYER, WALTER
Box 150, Kingman
TELLURIDE CHIEF MINE, Mohave co
Under dev

MIAMI COPPER CO
61 Broadway, New York 6, N Y
Pres: Sam A Lewisohn
VP: E H Westlake & John Greenburgh
Gen mgr: R W Hughes
Purch Agts: E J Morse & F L Bishop
Gen supt: J W Still
MIAMI COPPER CO MINE, Box 100, Miami, underground, Cu, Mo concentrates
Geol: J E Fowells
Mine engr: B G Messer
Mech supt: J J Luchessa
Elect engr: A T Netterblad
Safety engr: W R Collier
Met: C H Curtis
Assy: G R Warren
Mine supt: W F Distler
Mine fore: E G Williams
Mill supt: J W Smith
Mast mech: F J Martin
18,000-TON FLOT MILL
12,000 ton prod

MINERAL MOUNTAIN M & M CO
411 Mill Ave, Tempe
Mgr: L Lee Boyer
GORHAM & HALL GROUP, Pinal co, Ag
Producing
WOODPECKER MINE, Pinal co, Au, Ag, Pb
Under dev
SILVER QUEEN GROUP, Pinal co, Pb, Ag

MINGUS MOUNTAIN MINING CO
Jerome
MINGUS MOUNTAIN MINE, 1/2 mi N of Jerome
Under dev

MITCHAM, ROBERT
Box 101, Elfrida
Owner: Dr Edwin Larson, 4032 Wilshire Blvd, Los Angeles, Calif
SCRIBNER MINE, Cochise co, underground, Au, Ag, Pb

MITCHELL, J D
Chandler
SILVER SHIELD MINE, Pima co, Box 54, Sasabe Star Rt, Tucson, underground, Ag

MOHAVE MINING CO
c/o D M MacCornak, Professional Bldg, Boulder City, Nev, (lessee)
AH-VE-HA CLAIMS #1-4, Yuma co, Au

MONTANA MINE
Ruby
Owner: Hugo W Miller, 233 Grand Ave, Nogales
Underground, Au, Ag, Cu, Pb, Zn
Under dev, small shipments to smelter

MONTGOMERY, FREDA & C W WALKER
Box 489, Prescott
M & W CLAIM MINE, Yavapai co, Au

MOORES, C F
Crown King
RICHARD ARLYN #1 & 2, Pinal co, Pb

MORENO, RAMON G
Box 237, Patagonia
Pres: Ramon G Moreno
SAN RAMON MINE, 14 mi NW of Patagonia, underground, Pb, Cu, Zn, Ag, Au

MURRAY, TEX
Box 57, Tiger
VICTOR MINES #1-6, Pinal co, Pb, Cu
Under dev

NELSON & FITCH MINE
Big Bug dist, Yavapai co
Operator: Walter Nelson, Mayer
PLACER MINE, dragline, Au

NEW OLIVETTE MINES, INC
c/o W C Yell, Pres, Yuma
Secy-treas: Mrs Henrietta Miller, 428 E 8th St, Tucson
Mgr: Walter N Sim
NEW OLIVETTE GROUP, Pima co, Ag, Pb, Zn, Cu
Under dev

NEZIK, JOHN
Cleator, (lessee)
GRAY GOOSE MINE, Yavapai co, Au

NUTTER, EMMETT
Wickenburg, (lessee)
MONTE CRISTO & HALE GROUP MINES, Yavapai co, Cu

OCTAVE MINING CO
Octave
OCTAVE MINE, Au, Ag

OLD SOLDIER MINE
213 N Mt Vernon, Prescott, Au, Ag, Cu, Pb, Mo
Mgr: J Shull
Under dev

OLIVERIO, JOE
Box 1425, Globe
RED HILL MINES #1-16, Gila co, Cu

OLSON & BROWN
155 Pasadena St, Mesa
EL CAPITAN MINE, Pioneer dist, Ag

OLSON, ROBERT M
Box 1054, Superior
SILVER KING MINE, Pinal co
Under dev

ORO BLANCO MINES
CHOCTAW MINE, Santa Cruz co
30-TON GRAVITY MILL, Box 61, Ruby Star Rt, Tucson, Pb, Zn
Thomas J Anderson, gen mgr & mill supt
ORO BLANCO MINE, Santa Cruz co, c/o Robert S Tullar, Box 2568, Tucson, Zn, Pb

ORO MINING CORP
Parker
Mgr: Harry Fieldman
MINE in Yuma co, underground, Au, Cu

ORO VERDE MINING CO
Tucson
LUCKY SHOT MINE, Santa Cruz Co, Pb, Zn
Under dev

ORPHAN BOY MINE
Florence Junction
Lessee: Vic Lamb, Jr
Mine 18 mi S of Superior, Pb
Under dev

ORR, JACK, HARRY MAXWELL & CECIL BURMISTER
c/o Jack Orr, Rt 1, Box 390, Prescott
CASH MINE, Yavapai co, Zn, Pb

ORTIZ, JESUS
Ruby Star Rt, Box 8, Tucson
VIVIENNE MINE, Pima co
Under dev

OSBORNE, HARRY M
Parker
SUE MINE, 5 mi N of Parker, underground, Au, Cu
SEVEN TON MILL

OWENS, SHERWOOD B
Box 769, Tucson (see Silver Reef Mine)
Owner & gen mgr: Sherwood B Owens
HIGH CARD GROUP, N E of Sells, Au
Under dev

PARADISE MINES CO
Patagonia
Pres: Harry Levy
VP: Ray Levy
Dir: Rodney Turue
Gen mgr & purch agt: Cecil H Smith
Gen supt: Robert Bordley
MOWRY MINE, 11 mi S of Patagonia, underground, Zn, Pb, Ag, Mn
Geol & mine engr: L H Dydes
Under dev

PARIA COPPER CO
Kanab, Utah
Pres & gen mgr: Franklin A Heaton
VP: Adrian H Heaton
BROWN DERBY, LITTLE BUCK, BLACK BEAUTY, & SOUTH PHANTOM, 35 mi SE of Fredoniak underground, open-pit, Cu, Ag, Au
J Mark Holmes, mine engr
Galagher & Co, met
Deason & Nichols, assy

PARRIS, JESS
Vicksburg
RAMSEY MINE, Yuma co, open-pit, Au, Ag, Pb

PASELK, W S
Blythe, Calif, (owner)
COPPER PRINCE GROUP, Yuma co
Under dev

PAXSON, G D
Box 1942, Parker, (operator)
BILLY MACK MINE, Yuma co, Au

PAXTON, J B
Wagoner, (owner)
GOLDEN EAGLE MINE #1, Yavapai co
Under dev

PERRY, RAYMOND
Box 32, Vicksburg
SURPRISE MINE, Yuma Co, Pb, Zn
Under dev

PHELPS DODGE CORPORATION
40 Wall St, New York 5, N Y
Ch of Bd: Louis S Cates
Pres: Robert G Page
VP: Cleveland E Dodge
VP: Geo R Drysdale
VP: H M Lavender
Secy: James Douglas
Compt: J Mills Hawkins
Asst compt: K A Lawrence
Asst compt: A F Petersen
Asst treas & asst secy: H R Do
Asst treas & asst secy: R D Bar
Gen att: Debevois, Pilmpton & M, New York
DIRECTORS
P G Beckett
Wylie Brown
Louis S Cates
Cleveland E Dodge
Geo R Drysdale
William S Gray
L Carl Holmes
George M Humphrey
C Jared Ingersoll
Kenneth L Isaacs
Thomas S Lamont
H M Lavender
William DeF Manice
James F McClelland
Robert G Page
James C Rea
H DeWitt Smith
Alexander C Tener
Subsidiaries include Phelps Dodge Copper Products Corp & the Phelps Dodge Refining Corp, 40 Wall St, New York 5, N Y
ARIZONA OPERATIONS
Western gen offices, Douglas
VP & gen mgr: H M Lavender
Asst gen mgr: C R Kuzell
Dir of Pub rel: W J Uren
Office mgr: H E Moore
Gen audit: John Kuhn
MINING DIVISION
MORENCI BRANCH, Morenci mines, concentrator & smelter
Mgr: L M Barker
Gen supt: W E Fenzi
296,000,000 lbs Cu prod yearly from smelter
15,600,000 tons ore prod yearly from mines
NEW CORNELIA BRANCH, mines & concentrator at Ajo
Mgr: W C Lawson
7,700,000 tons prod from mines & treated at concentrator
DOUGLAS REDUCTION WORKS, smelter at Douglas
Mgr: J B Pullen
Supt: M G Fowler
K V Kruse, ch engr, mech dept
165,800,000 lbs ref Cu prod
UNITED VERDE BRANCH, mines at Jerome, concentrator & smelter at Clarkdale
Gen supt: C E Mills, Clarkdale
Gen Supt: W W Little
348,000 tons prod from mines
30,000,000 lbs ref Cu prod from smelter
COPPER QUEEN BRANCH, Bisbee
Gen supt: W P Crawford
Mgr: J B Pullen
PHELPS DODGE MERCANTILE CO, Bisbee, Douglas, Morenci, Clifton
Gen mgr: Sidney Stickland, Douglas
NEW CORNELIA COOPERATIVE MERCANTILE CO, Ajo
SALES DEPT
Gen sales mgr: W C Bennet, New York
Mgr of sales: M H Crego, New York
Mgr of sales, C H Winship, New York
GENERAL PURCHASING DEPT
Gen purch agt: P G Lee, New York
Asst gen purch agt: C C Wolf, Douglas
GEN TRAFFIC DEPT
Gen traffic mgr: J W Lee, New York
Western traffic agt: A C Bacon, Douglas
Asst gen traffic mgr: B Ponessa, New York

PHILLIPS ASBESTOS CO
Box 662, Globe
Mgr owner: Guy Phillips
Mine near Seneca, Asbestos fibre
Small mill & grading pl, 40 employed

PIEDMONT MINES, INC
Portal
Gen mgr: L K Diffenderfer
MILLTOP MINE, Portal, underground, Pb, Zn
MILL

PIKE, W R
Prescott
ORO PLATA MINE, Yavapai co, Au, Pb

PILGRIM MINE
Crown King, underground, Au, Ag, Cu
Gen mgr: J D McClintock
Don Von Tilborg, mine supt
10-TON GRAVITY MILL

PLEDGE METALS, INC
Mgr: Robert F Dannelly, Box 472, Superior
AJAX GROUP, Pb, Zn

PRIDE of the WEST
Washington Camp, Cu, Pb, Zn
Mgr: Manvel Majalco

PRITCHETT, W F
Box 1370, Prescott
ORO PLATA-COMBINATION MINE, Yavapai co, Pb, Au

PUMICE CORP OF AMERICA
Ajo
Mgr: B L Gamel
MINE & MILL in Pima co, Mica

PURSLEY, RALPH A
Dos Cabezos
PINE-ZINC #1, 2, 3, Calif dist, Pb, Zn
Under dev

PYATT, J C
Box 587, Prescott
ZONA MINE, Yavapai co, Pb

RACINE, L W
Box 128, Globe
RAMBO & RESCUE MINES, Globe, Miami dist, Gila co, Ag

RAINBOW MINE
Heber, open-pit, Mn
Johnnie G Patrick, owner & engr

RAMSEY, BEN
Tiger
BUSY BEE MINE, Pinal co, Cu
Under dev

RAMSEY, JOHN L
Wicksburg, (owner)
R & A MINE, Plomosa dist, Ag, Pb

RAMSEY MINES, INC
Bouse
Mgr: Jess Paris, Box 563, Wickenburg
RAMSEY MINE, Plomosa dist, Yuma co, underground, Pb, Au, Ag

RAY LEAD SILVER MINING CO
Globe
Mgr: Charles Moores
MINE in Yuma co, underground, Pb, Ag

RED HILL MINE
Wenden, Pb
Owner: Tom Rodgers
Under dev

REED, WM H & ELMER BURTON
Klondyke
ABE REED MINE, Klondyke, underground, Pb

RENNER, JAMES
Box 142, Cave Creek, (operator)
RED ROVER MINE, Maricopa co, Ag, Cu
5-ton prod monthly

REORGANIZED SILVER KING DIVIDE MINING CO
Box 357, Austin, Nevada
(For officers see Nevada listing)
MOUNT UNION MINE, 10 mi S of Prescott, underground, Au, Ag, Pb, Zn
Supt: Harry V Snell
Under dev

REYMERT EXT SILVER MINES
Pres: Norman DeVaux, Box 521, Superior
REYMERT MINE, Pinal co, underground, Ag
Lessee: REYMERT EXTN SILVER MINES

RHEA, WILLIS V
Tombstone
MARY JACK MINE, Cochise co, Pb

RILEY & HOLMES
Box 1486, Yuma
RED CLOUD MINE, Yuma co, Pb
Under dev

RIO DEL MONTE MINES, INC
Salome, underground, Au, Ag, Cu, Pb, Zn, Fe
Pres & mgr: O K Gilliam
Dir: R J Conan
Emil Anderson, mine supt
35-TON FLOT MILL
Under dev

RITTER MINING CO
Patagonia
Mgr: Fred D Ritter, Sr, Washington Camp
KANSAS MINE, Washington Camp, underground, Pb, Zn, Cu
Prod: 100 tons per month

RIVERSIDE MINING CO
55 N Matlock St, Mesa
Pres: A H Johnson
RARE METALS MINE & GRAY COPPER MINE, 8 mi S of Ray, underground, Mo, Cu, Au, Ag

ROBERTS, J B
Box 1737, Parker
SURE SHOT MINES #1-3, Yuma co
Under dev

RODRIQUEZ, A B
Tombstone
MARIA MINE, Cochise co, Pb

ROLLER, D A
Kingman
ANDY CONDA MINE, Cedar Valley dist, Cu
Under dev

ROSE BROS & A R PILANT
Walker Rt, Prescott
PINE MOUNTAIN MINE, Yavapai co, Pb, Zn
Under dev

ROSSI, VALERIO & RUFUS CHIARA
Bagdad, (operators)
VIDANO MINE, Yavapai co, Pb
Under dev

ROYAL BLUE MINING CO
Patagonia
Mine in Tyndall Dist, Santa Cruz co, Cu, Ag, Pb, Au
Under dev

SAINT ANTHONY MINING & DEVELOPMENT CO, LTD
Tiger
Pres: James A Fowler, Jr
VP & gen mgr: John A Richards
VP & treas: Meyer Handleman
Asst mgr: J J Strutzel, Jr
Ch clk: B W Roebuck
MAMMOTH ST ANTHONY MINE, Au, Ag, Cu, Pb, Zn, Mo, V
J A Gardener, purch agt
Richard Eddy, Sr, mine supt
E V Given, mill supt
Max Daugherty, engr
B F McGuire, mine engr
John B Harry, mine fore
P J Arnold, mill fore
Homer E Wood, elect engr
James E Snodgrass, mech engr
Manuel DeLeon, assy
600-TON GRAVITY FLOT MILL LEAD SMELTER
Mo,V Leaching Pl
Smelter & leach pl in standby condition
Present operating facilities,
250-TON FLOT MILL

ST LOUIS MANGANESE CO
Box 527, Patagonia, Mn
Mgr: C Hogsett
50-TON GRAVITY MILL

ST LOUIS MINE
Kingman
Owner: A T Loitzow
Mine near Chloride, Pb

SALT RIVER MINING CO
Globe
Mgr: Clark King
MINE in Gila co, underground, Asbestos

SALTWATER, JOHN
Tees Nos Pas
WEST RESERVATION MINE, Apache co, open-pit, U

SAN MANUEL COPPER CORP
Superior
Pres & J McNab
VP & gen mgr: W P Goss, Tiger
SAN MANUEL MINE, Tiger, Pinal co, Cu
H I Ashby, engr
R P Diehl, elec engr
C A Bilson, mech engr
Under dev

SANDERS, W W
Portal
LEADVILLE GROUP, Calif dist, Cochise co, Pb

SANTA TERESA MINING CO
Secy: Paul Merrill, Safford
SANTA TERESA MINE, Graham co, Pb

SCOTT, H R
Box 1005, Globe
81 GROUP MINE, Pinal co
Under dev

SEEBOLD, G H
5th Navajo Dr, Prescott (Leasing from Rabel Estate)
LOOKOUT MINE, Humboldt, Pb, Zn, Au, Ag
Under dev

SEIN FEIN MINE
Aravaipa dist, Klondyke, underground, Au, Ag, Cu, Pb, Zn
Mgr: Dean Nicholson
Raymond Pointer, mine supt
E H Lundquist, engr

SHAD, J L
Portal
GRACE MINE, Cochise co, underground, Zn

SHANKLIN, W R
Box 7, Dos Cabezos
GOLD PRINCE GROUP, Cochise co, underground, Au, Ag, Pb
450-ton prod monthly

SHAPLEY PROCESSING CO
1488 E Town & Country Lane, Phoenix
Pres: Cooper Shapley Jr
VP: George Seeley
Dir: Chas Tucker
SNOWBALL & WHITE KING, 22 mi SW of Aguila, open-pit, Fourspar
Under dev

SHATTUCK DENN MINING CORP
120 Broadway, New York 5, N Y
Administrative Office, Bisbee
Pres: Thomas Hardon
VP: S S Shattuck
Secy-treas: Norman E LaMond
Compt: R H Cochrane Jr
IRON KING MINE, Humboldt, Au, Ag, Pb, Zn
H P Mills, mgr
A J Zinki, asst mgr
A L Fessin, mill supt
J W Sievwright, sh clk
J A Wilcox, cons engr
T W Newell, supt
7B LEAD-COPPER CO (controlled subsidiary)
7B MINE, Hayden (inactive)
ZUNI MILLING CO (wholly-owned subsidiary listed under New Mexico)
KAY COPPER MINE, 50 mi N of Phoenix
Mgr: Frank Garrett

S W SHATTUCK CHEMICAL CO
1805 S Bannock St, Denver, Colo
Pres: J Seward Potter
Mgr: George Scholey
NEW YEAR'S EVE MINE in Pima co, open-pit, Mo, Cu
Tino Saunders, mine fore
D (Red) Harris, mill fore

SHOEMAKE, JOHN & CARL
Box 124, Prescott
GOLD COIN GROUP MINE, Yavapai co, Au

SHORT, A B & V T
156 E Rogers Rd, Tucson
ARMISTICE GROUP, Hartford dist, Pb
Under dev

SIERRITA MINING & RANCHING CO
Treas: Lee Harris, Ruby Star Rt, Box 25, Tucson
GOLDEN FLEECE MINE, Pima co, Au

SILVER QUEEN MINE
Mineral Hill dist, Chloride Cliffs, Pb
Operator: Arthur A Talmadge, Superior
Under dev

SILVER REEF MINE
Casa Grande
Pres & gen mgr: Sherwood B Owens
SILVER REEF MINE, 13 mi S of Casa Grande, underground, open-pit, Ag
E T Green, mine engr
Alvin W Gerhardt, mine supt & engr
1,000 tons prod monthly

SITTON, F A, INC
Cortez, Colo
Mgr: R O Dulaney
Asst mgr: G N Kennedy
MINE near Cove, open pit & underground, U, V
Under dev

SMITH, CHARLES H
Box 729, Superior
LITTLE FOUR TUNNEL MINE, Gila co, Ag

SNOW DRIFT MINE
439 S Marina St, Prescott
Owners: H A & L Berberich
SNOW DRIFT MINE, 16 mi SE of Prescott, underground, Au, Ag, Cu, Pb, Zn
Under dev

SOLPER & PIKE
c/o Lloyd W Solper, Kirkland, (lessees)
LITTLE JOKER MINE, Yavapai co, Ag
SOLPER & PIKE lessees to LITTLE JOKER MINE

SOUTHERN CROSS MINING CORP
Box 335, Bouse
Mgr: L A Aplington
SOUTHERN CROSS MINE, 10 mi S of Bouse, underground, Pb, Zn, Ag, Au
300,000 lbs yearly output from lead smelter
Under dev

SPARKES, GRACE M
STATE of TEXAS MINE, Cochise co, Zn, Pb
Perry L Bones, mine mgr, Star Rt, Hereford

STARNICK, JOE
Box 13, Hedrock
ATLAS GROUP MINES, Pima co, Cu

STATE of MAINE MINE
(see E P Hilton)

STEWART, CLYDER
Winterhaven, Calif
HARDSCRABBLE MINE, Yuma co
Under dev

STEWART, J W
Box 64, Vicksburg
BETTLE #1 MINE, Yuma co, Au

STODDARD MINE
Box 156, Mayer
Owner: Eugene Meyer
Cu

STORM, HARRY C
Box 1278, Globe
C-H MINE, Gila co, Pb

SULLIVAN, A J
Skull Valley, (mgr)
BOSTON ARIZONA MINE, Yavapai co, open-pit, Pb, Zn, Cu

SULLIVAN SMITH & MARIO CO
Mayer
Mgr: A J Sullivan, Skull Valley
BOSTON ARIZONA MINE, underground, Pb, Zn & Cu
Under dev

SUMMIT COPPER MINES, INC
Box 116, Payson
Pres & gen mgr: R W Thompson
VP: Dr A L Gagnier
Directors
E R Horne, Marven Miller, J E Shelton, H R Meadows, E V Cox, Allen Belluzzi, W W Clark, Nina W Thompson, Norman Brooks
SUMMIT COPPER MINES, Payson, underground, Au, Cu
William L Gist, mine fore
50-TON GRAVITY MILL

SUNDANCE MINE
in Hassayampa dist, Zn, Pb
Operator: Ernest Clark, Prescott
Owner: Edwin F Rippey, 6724 N 13th Ave, Phoenix
Under dev

SUNSET MINES, INC
Selis
Pres & mgr: John Luizza
MINE in Pima co, underground, Au

SUN-GOLD MINING CO
Treas: John C Gungil, 711 Valley Natl Bldg, Tucson
Mgr: Alfred E Turner, Selis
SUN-GOLD MINE, Pima co, underground, Au
Under dev

SUNSHINE MICA CO
1302 N 14th St, Phoenix
Pres: William Rossman
Gen mgr: John T Atchison
Under lease to Pumice Corp of Sunshine Mine, 10 mi SW of Ajo, Mica, open-pit
Part time prod

SUPERIOR MINE
Superior
Operator: E A Borge, Globe, Cu

SWISSHELM GOLD-SILVER CO
Pres: Ben Haney, 338 N Granada St, Tucson
SWISSHELM MINE, Cochise co
Under dev

SYLER, P N
Portal
HARRIS MINES #1-6, Calif dist, Cochise co, Pb, Zn, Cu

TEMPRIL NO 1
Nogales, underground & open-pit, Au, Ag, Pb
Miller, Nogales, assy
Under dev

THANKSGIVING MINE
Mineral Hill dist, Au
Operator: Geo Myers, Box 222, Florence

THUNDERBOLT MINE
Cleater, Ag, Pb, Zn
Owner: J H Christensen
Under dev

TOLEDO MINING CORP
Pres: Pat B Mellinger, 622 Market St, Youngstown 2, Ohio
Mgr: Rufus Chiaro, Bagdad
MT SPRINGS GROUP, Yavapai co, Pb, Ag, Au
Under dev

TOMBSTONE DEV CO
Supt: Brooks Davis, Tucson
TOMBSTONE GROUP in Tombstone Dist, Ag, Pb

TOMBSTONE EXTENSION
Tombstone, Pb
Lessee & mgr: Ronald L Brown
Trustee: C M D'Autrenant

TORNADO MINING CO
Box 1086, Miami
Mgr: William Humphrey, Globe
LONDON ARIZONA MINE, Banner Dist, Zn, Ag, Pb
Ed Sykes, Globe, supt

TRINITY MINE
Yavapai co, Ag
Operator: W Ernest Clark
Under dev

TUNGSTENITE MINE
Operator: Dalton Robinette, Box 51, Kingman
W

U V X MINE
in Verde Dist, Cu, Au
Operators: Peach & D'Arcy, Clarkdale

UNION HILL MINE
Maricopa co, Feldspar
Mgr: Isaac Cambell, Wickenburg

UNION PLASTER CO
Winkelman
Mgr: J S Tillman
MINE in Pinal co, open-pit, Gypsum

UNITED MINE OPERATORS, INC
UNIDA or BLOO NELLEY MINE, Yavapai co
Lynn Hersy, consulting engr, Wickenburg
Under dev

U S BUREAU OF MINES
Mgr: Charles A Kunke, Congress
MAGGIE GROUP MINES at the Alamo, underground, Mn

UNITED STATES SMELTING REFINING AND MINING CO
Box 2137, 75 Federal St, Boston 6, Mass
Au, inactive

UPSHOT MINES, INC
Valley National Bank Bldg, Prescott
Pres: Omar D Smith
VP: D H Wachtel
Secy-treas: Clarence E Karoth
Directors: A Sullivan, Harry T Lindley & Henry C Firman
UP SHOT MINE, Yavapai co, underground, Ag, Cu, Pb
Under dev

URANIUM, INC
Box 2343, Tucson, (operator)
PAPAGO CHIEF or NAPOLEON MINE, Pima co, Ur

VANADIUM CORP OF AMERICA
Tees Nos Pas
Mgr: D W Viles, Durango, Colo
MONUMENT #2 MINE, Monument Valley Dist, underground, U, V
Walter Watt, supt, Durango, Colo
Booth Eckman, mine supt
1800-tons prod monthly

VANADIUM INVESTMENT CO
Globe
Mgr: R Scott
MINE in Gila co, underground, Pb, Ag

VAN DYKE COPPER CO
(see Anaconda Copper Mining)

VAN HOOK MINING CO
Supt: A C Van Hook, Box 53, Prescott
DAVIS-DUNKIRK MINE, Yavapai co, Au, Ag

VERDUGO, T H
Box 1023, Clifton, (lessee)
CLIMAX LODE MINE, Copper Mt dist, Au, Ag

WALL, LEO
Box 144, Ray, (owner)
RAY SOUTHERN GROUP, Pinal co
Under dev

WARD, JOE & TOD EVANS
Box 1041, Prescott, (lessees)
CROOK & WESTERNER, Yavapai co, Au

WEST END MINING CO
Pres: John C Ballard, 1921½ Maple Ave, Los Angeles, Calif
LAUGHING JACKASS MINE, Pinal co
Under dev

WHITE, ALLEN L & A C NORWOOD
Jacobs Lake, (operators)
KAIBAB GROUP, Coconino co, Cu

WHITEMARSH, C H
Crown King
WAR EAGLE MINE, Yavapai co, underground, Au, Ag, Zn

WHITMORE, LELAND O
Overton, (operator)
COPPER MT MINE, Mohave co, Au, Ag, Cu, Zn
Under dev

WINN, LOUIS
Globe
MONET METALS MINE, Gila co, underground, Au, Ag, Pb, Zn

WITTE, FRANK
Globe
McMILLAN MINE, Gila co, underground, Ag

WOLFF, CARL
Box 300, Lowell, (mgr)
ORCHARD & ANNEX CLAIMS, Cochise co
Under dev

WONDER ASBESTOS MINE
Box 366, Globe
Owner: Louis A Kuehne
Mine 45 mi N E of Globe, Asbestos
Under dev

WOOLSEY, F B, & KISTLER, ART
Monte Bello, Calif
PAPAGO CHIEF MINE, 10 mi N of Sasabe, underground, U, Cu
Under dev

YUCCA MINING & MILLING CO, INC
Box 67, Yucca
Pres & gen mgr: Robert J Dalton
Dir: Ben F Williams
ANTLER MINE, Box 67, Yucca, underground, Cu, Pb, Zn, Au, Ag
J N Payne, mill supt
120-TON FLOT MILL

ZANNARAPOLIS TUNGSTEN MINE
Box 500, Congress, AZ
Mgr-owner: J P Zannaras
J P Robinson Jr, mine supt
50-TON GRAVITY MILL
Under dev

CALIFORNIA

ABBOTT MINES, INC
120 Main St, San Francisco
Pres: R F O'Brien
Gen mgr: C O Reed
ABBOTT MINE, Williams, underground, Hg
FURNACE OPERATION

ADAMS, GEORGE F, A G LANE, & FRANK GALLAGHER
Maricopa
MARIPOSA MINE, near Maricopa, underground, Au
5-STAMP MILL

AKIN, M H
La Porte
DAVIS MINE, Sierra co, placer, Au

ALASKA MINE
605 Sixth St, San Francisco
Lessee: H L Sorenson
MINE at Pike, Au
R J Kohlen, mgr
40-STAMP MILL at Pike

ALHAMBRA GOLD MINE CORP
Georgetown
Main office: 1903 Outpost Dr, Holl wood
Pres & gen mgr: O H Griggs
VP: S W Binger
Secy-treas: N A Plainer
E L Reeves, geol
Fred J Pearney, mine supt
ALHAMBRA MINE, El Dorado co, 11 mi NE of Placerville, underground, Au
50-TON FLOT MILL
Under dev, some prod
SUNSHINE MINE, Plumas co, 8 mi S of Quincy
Idle

ALICE MINE
Operator: R L Coughran, Isabella
2b

ALLEN, J
Chinese Camp
WOOD CREEK MINE, Tuolumne co, placer, Au

ALLOY MINING CO
1320 N Alameda St, Compton
Pres: Benjamin A Barre
Gen mgr & engr: W H Hile
Dir: A D Disney
Purch agt: C D Randall
NEW TRAIL MINE, Nipton, underground, Au, Ag, Cu
J D Hale, mine fore
200 tons per month

ALMADEN DUMPS
Almaden
MINE in Santa Clara co, Hg

ALTA MINING CO
P O Box 10, Altaville
ALTAVILLE MINE, Calaveras co, placer, Au

ALTANA CORP
Nipton
MINE in Mohawk, San Bernardino co, Au, Ag, Cu, Pb

AMERICAN POTASH & CHEMICAL CORP
3030 W 6th St, Los Angeles 54
Pres: Peter Colefax
Ch of Bd: B H Armour
VP of sales: W J Murphy
VP of tech operations: R W Mumford
VP of non-tech operations: R B Coons
Western sales mgr: D B Scott
Pl mgr: A J Anderson
Purch agt: L H Cornelius
MINE at Trona, sylvite, borax, soda, Br, Li
350,000 tons yearly prod

AMERICAN SMELTING & REFINING CO
120 Broadway, New York, New York
(for officers see Eastern listing)
SELBY SMELTER, Selby (405 Montgomery St, San Francisco 4), lead smelter & refinery)
W S Reid: mgr
J M Hanna, purch agt
H P Wagner, gen supt
R E Shinkossey, smelter supt
B K Shedd, refinery supt
W H Holmes, mast mech

ANACONDA COPPER MINING CO
25 Broadway, New York, New York
Pres: W H Hoover
Ch of bd: C F Kelley
Exec VP: R E Dwyer
VP chg metallurgical operation: F Laist
VP chg metal operation: E O Sowerwine
VP chg mining: C K Weed
WESTERN OPERATIONS
VP: E S McClone
Gen mgr, International Smelting & Refining Co: F A Wardlaw, Jr
DARWIN MINES, Darwin, Pb, Zn, Ag
J K Droubay, mgr
J H Collins, purch agt
F S Tong, mine supt
Mack M Tilley, mine fore
D L Davis, engr & ch geol
F Paetsch, ch electrician
R M Trezona, mast mech
300-TON FLOT MILL, Darwin
E C Peterson, mill supt
Louis Warnken, assy
H M Lindholm, met
Prod: 350 tons
SHOSHONE MINES, Tecopa, Pb, Ag, Au, Zn
J K Droubay, mgr
J H Collins, purch agt
F A Baby, supt
H I Hill, mine fore
Charles Joy, engr & geol
H Deasy, power pl fore
MILL, Tecopa
E C Peterson, mill supt
Prod: 150 tons daily

ANCHO ERIE MINING CO
Box 911, Nevada City
Gen mgr: Bert C Austin
UNDERGROUND MINE, Au
S J Odgers, mine supt
200-TON CYANIDE-FLOT MILL
Ira D Billick, mill supt
Idle

ANDERSON ROCK PLANT
Box 1372, Fresno
ANDERSON ROCK PLANT MINE, Fresno co, placer, Au

ANKENEY, GEORGE D
642 N St, Yreka
LONG GULCH CLAIM, Siskiyou co, underground, Au

ANNETT, NORMAN
Sweetwater, via Wellington
SILVERADO MINE, Mt Patterson dist, Ag

ANTELOPE MINING CORP
Star Rt 1, Box 49-A, Lancaster
ROGERS-GENTRY MINE, Los Angeles co, Au, Ag

ARCHER MINING CO
510 S Spring St, Los Angeles 13
Pres: B C Aoos
VP: Frank B Belcher
Gen mgr & purch agt: R D Prior
ARCHER MINE, Coalinga, Hg
Gene Hermansen, mine supt
V Arcinriga, engr

ARGO, ROY
11837 S Loma Drive, Whittier
3b

ARRINGTON, L W
Grants Pass
KING MIDAS MINE, Siskiyou co, placer, Au

ASSOCIATED METALS, INC
c/o Hayes Evans, Rt 2, Sequim, Wash
Pres: Ira Mahon
PINE GROVE MINE, 10 mi E of Jackson, underground, Au
ORO GOLD MINE near Downieville
James T Bonner, supt, Box 194, Pioneer

ATOLIA MINING CO
1022 Crocker Bldg, San Francisco
Pres: P R Bradley, Jr
Leased to Hoefling Bros, Sacramento
UNION MINE & other mines at Atolia, W, Au

BACHELS, A
80 Pierce St, San Francisco
EMPIRE-LONE STAR GROUP, Sierra co, underground, Au

BAINBRIDGE & McHENRY
Nipton
Owner: Paul A McHenry
CARBONATE HILL MINE, Kingston dist, San Bernardino co, Au, Pb, Zn

BAKER, TOM
Box 21, Shoshone
TERESA TURQUOISE QUARTZ MINE, Inyo co, underground, Ag, Cu

BALLANCE, JOHN W
Nipton
AUNT BUZZARD MINE, Clark Mountain dist, San Bernardino co, Ag, Cu, Pb

BARIUM PRODUCTS, LTD
405 Lexington Ave, New York, New York
Pres: W M Williams
Secy: W E Gilbert
SAVERVOOL MINE, Plumas co, Barite
ALMANOR MINE at Greenville, Ba804
J B Perry, mine mgr
H J Tillia, mine supt
R F Love, engr
T J Cayot, mill fore
Under dev

"BARNETT"
c/o Thomas E Creed, Cima
MINE in San Bernardino co, Au, Ag, Cu, Pb

BARNETT, W C & H E GREEN
Box 355, Merced Falls
CHEROKEE MINE, Mariposa co, underground, Au

BARRETT, W J & MARY
4476 Santa Cruz Ave, San Diego 7
TRAILS END CLAIM, SQUARE NAIL CLAIM, Calico dist, San Bernardino co, Au, Ag, Cu

BAROID SALES DIVISION, NATIONAL LEAD CO
630 Ducommun St, Los Angeles
(for officers see Central listing)
HECTOR MINE & PLANT, P O Newberry, underground, Bentonite
Jack Hereford, supt
EL PORTAL MINE & PLANT, El Porta, underground, wet grinding of Barytes
S B Spitzer, supt
MERCED MILL, Merced, dry grinding of Barytes
S B Spitzer, supt

BAUMEISTER, C A & SON
MINE at Cloverdale, Hg

BEAN, WALTER, CLYDE STONE & ASSOC
Woodleaf
SLAPJACK MINE at Woodleaf, underground, Au

BECK MARTIN
Box 343, Mohave
ELEPHANT EAGLE & WHITEMORE MINES, Mohave dist, Kern co, Au, Ag, Pb
CUSTOM MILL

BEDWELL, VIRGIL
Box 26, Denair
PRETZ MINE, Mariposa co, underground, Au

BELDEN AMADOR MINES, INC
Box 30, Pine Grove
VP & gen mgr: Leon M Banks
BELDEN MINE near Pine Grove, underground, Au
GRAVITY-FLOT MILL
Under dev

BENNETT MINING CO
Weaverville
BENNETT MINE, Trinity co, placer, Au

BENNETT, V B
211 N 16th St, Sacramento
V B BENNETT DREDGE MINE, Trinity co, placer, Au

BERG & SCIOCHETTI
Box 637, Hollister
JUNIPER MINE 51 mi SE of Hollister in Panoche Valley, underground, Cinnabar
RETORT
Prod: 30 flasks quicksilver monthly

BERTIE, DR WILLIAM J
P O Box 843, Las Vegas, Nevada
COARSE GOLD, COARSE GOLD #2 & DOUBLE CROSS CLAIMS MINES, Plumas co, placer, Au

BEST MINES CO
Box 177, Downieville
Owner & Operator: C L Best
GOLD BLUFF, BRUSH CREEK & OXFORD MINES, underground, Au
L L Huelsdonk, mgr
William T Reed, Jr, mine fore
Angus James, mine shiftboss
B C Austin, engr
A N Hinton, master mech & electrician
100-TON FLOT-GRAV MILL
John Folsom, mill supt
Vernon Huffman, mill fore

BIG GOLD MINE
Box 251, Randsburg
Operator: John M Kreta
Au, W

BISHER & MERRICK
Dobbins
HINTON GOLD MINE, at Dobbins, underground, Au

BLACK EAGLE MINE
c/o Eagle Lead Co, Indio, Ag, Pb, Au, Cu
Gen mgr: W E Covey

BLACK ROCK MINING CO
Pres: Ray L Wright
MINE in Inyo co, 35 mi N of Laws
A E Beauregard, Box 702, Bishop, mgr
25-TON GRAV MILL

BLACKSTONE MINE
5209 Barrett Ave, Richmond
Gen mgr: Lawrence A Sanchez
Purch agt, gen supt & mine supt: Elliot H Syms
BLACKSTONE MINE, 4 mi N of West Point, underground, Au, Ag, Pb, 30 ton prod
Elliot H Syms, mine supt
Louis Sanchez, mine fore
30-TON FLOT MILL
Tony Partal, mill fore
SMELTER, 360,000 yearly output, Au, Ag

BLAKEMORE, PAGE B
Bridgeport
PITTSBURGH MINE, Mono co, underground, Au, Ag

BLANCHARD, WILLIAM E
North San Juan
JUNCTION MINE, Nevada co, placer, Au

BOLES, VERN
c/o Gen Del, Grass Valley
LIBERTY HILL MINE, Nevada co, placer, Au

BORKS, A O
Box 437, China Lake
ARONDO MINE, Inyo co, underground, Au, Ag

BOUVIER, A R
Callahan
PANAMO MINE, Siskiyou co, placer, Au

BOYLES, G M
Portola
WALKER MINE, Plumas co, underground, Cu

BRADFORD, L M
Box 207, Madera
PROBABLY THE DAULTON MINE, Daulton dist, Madera co, Ag, Cu, Pb

BRADLEY MINING CO
425 Crocker Bldg, San Francisco 4
Pres: Worthen Bradley
Secy-treas: E A Griffen
MT DIABLO MINE, Clayton, Contra Costa co, commercial rock
Vic Blomberg, supt
REED MINE at Monticello, Hg
SULPHUR BANK MINE, Clearlake Park, Hg
A H Wolbert, supt
GREAT WESTERN MINE, Middletown, selling timber, Hg

BRIGGS, HARRY E
Box 613, Trona
RED CLOUD MINE, Inyo co, Au, Ag, Pb, Zn

BRIGHT, DICK
Bishop
REWARD MINE, Inyo co, Au, Ag, Pb

BROCK, ROBERT
River Route, Box 23, Madera
HEISKELL PROPERTY, placer, Madera co, Au

BROOKS, J C
Box 26, N San Juan
BIG CHIEF CLAIM & AMERICAN DIGGINGS, Nevada co, placers, Au

BROWER, JESSE H
Bagby
COMBINATION MINE, Mariposa co, underground, Au

BROWN BEAR MINES
c/o E E Erich, French Gulch
Gen mgr & const engr: E E Erich
BROWN BEAR MINE, near French Gulch, underground, Au
70-TON FLOT MILL
Under dev

BROWN, LESTER
Box 674, Bishop
L & L MINE, Bishop, Inyo co, W

BROWN'S CREEK PLACER MINE
Box 23, Weaverville
GOLD PLACER MINE, Trinity co

BRUN, HAROLD
Strawberry Valley
GEORGIA GULCH MINE, Yuba co, placer, Au

BRYAN, BERT L
Smith Flat
Ida Bryan property, El Dorado co, Au

BUENA VISTA NO 2 MINE
Box 25, Redding
Owner: H G Graves
Au, Cu
20-TON FLOT MILL

BUNKER HILL MINING CO
Box 1347, Redding
Gen mgr & engr: A Mansfield
BUNKER HILL MINE, 3 mi NW of Redding, underground, & open pit, Au, Ag, Cu
Peter Kanuck, mine fore
Under dev

BURKHART, B F
Bear Valley
A J CLAIM MINE, Mariposa co, underground, Au

BURTON MINES INC
Rosamond
Mgr: Clifford G Burton
Asst mgr: Glen A Settle
Purch agt: Geo McNamee
TROPICO MINE 5 mi W of Rosamond, underground, Au, Ag
RUTH MINE 13 mi NW of Trona, underground, Au, Ag, (Idle)
100-TON CYANIDE MILL
Alec Burton, mill fore

BUTTE LODE MINING CO
Box 195, Randsburg
BUTTE LODE MINE, Kern co, underground, Au, Ag

C H M LEASING CO
Iowa Hill
OCCIDENTAL MINE, Placer co, placer, Au

CALAVERAS CENTRAL GOLD MINING CO, LTD
Angels Camp
Pres & gen mgr: Harry Sears
Mgr: Desmond Sears
CALAVERAS CENTRAL MINE, deep drift mine, worked through vertical shaft, Au
GRAVEL CRUSHING & SCRUBBING PLANT for gold extraction, 600-800 tons daily, tailings sold as aggregate
Under dev

CALIFORNIA LIBERTY MINE CO
Dobbins
Pres: Floyd J Wilson, Denver, Colo
CALIFORNIA LIBERTY MINE, N of Dobbins, underground, Au
Vern Cox, supt

CALIFORNIA SILVER CORP
9814 Washington Blvd, Culver City
ANNEX (Silver Hill) MINE, Silurian dist San Bernardino co, Ag, Cu, Pb

CALIFORNIA ZONOLITE CO
Sacramento
Mgr: C H Wendel

CAMPION, IVAN H
Somerset c/o Coles Station
IRISH SLIDE MINE, 23 mi SE of Placerville, underground, placer, Au, Ag

CAPITAL DREDGING CO
351 California St, San Francisco 4
Pres: Stanley M Bolster
VP & gen mgr: F C Van Deinse
PLACER MINE, Rt 2, Box 1460, Fair Oaks, Two 11,000-yd bucket dredges, Au
H C Ferring, gen field mgr
O W Boice, mine supt
Norris M Phelps, engr
M B Chaffin, dreggemaster
W H Bolin, shop fore

CARNOW, JAMES
Coulterville
LUCKY MINE, Mariposa co, placer, Au

CARSON HILL GOLD MINING CORP
206 Sansome St, San Francisco
Pres: Walter L Brown
Secy: John N Rosekrans
MINE at Melones
1,000-TON CONCENTRATOR with cyanide plant

CASA DIABLO MINE
c/o J W Bertram, Bishop, Calif
MINE in Chidago dist, Mono co, Au, Ag, Pb

CASSELBERRY, FRANK
Box 543, Grass Valley
MOORE'S FLAT MINE, Nevada co, placer, (tailings), Au

CASTEEL, L R
Rt 1, Box 678, Fresno
HUDSON PROPERTY MINE, Madera co, placer, Au

CASTRO CHROME ASSOCIATES
232 Montgomery St, San Francisco
Operator & mgr: George I Barnett
MINE near San Luis Obispo Creek
GRAV MILL

CENTRAL EUREKA MINING CO
Russ Bldg, San Francisco
Pres & gen mgr: J D Swift
VP: A W Cobby
Secy-treas & mgr: Donald D Smith
Purch agt: E Cunningham
Gen supt, geol, mine engr: A Kendall
MINE at Sutter Creek, Amador co, underground, Au, Ag
E Mortensen, mine fore
Sam Hargis, mine shiftboss
Primo Frediani, mech engr
Paul Ransom, elec engr
Mick Eliskovitch, safety engr
200-TON STAMP-FLOT MILL with cyanide unit, Au, Ag
Keith Kunze, met & mill supt
Don Jones, mill fore
Frank Arnisi, assy

CENTRAL PACIFIC GOLD MINING CO
6238 Sycamore St, Seattle, Wash
Pres: W H Patterson
Secy & mgr: Mrs Laura Munk, 314 W 78th St Seattle, Wash
SURE PAY MINE, 18 mi E of Oroville, Au, Ag, Pb

CHAMBERLIN, CHARLES
Box 24, Johannesburg
O K GROUP MINE, Kern co, underground, Au, Ag

CHAPMAN & SONS
CHAPMAN & FISHER PLACER MINES, Junction City, Trinity co, hydraulic, Au
George P Chapman, mine supt

CHASE, ED
Box 202, Downieville
CHASE MINE, Sierra co, Au

CHENOWETH, E E
6517 Raymond St, Oakland 9
ORO GRANDE PLACERS MINE, Klamath River dist, Siskiyou co, Au

CHLORIDE CLIFFS MINE
Beatty, Nev
Underground, Au, Pb
Under dev

CHOWCHILLA DREDGE CO
Box 348, Whittier
CHOWCHILLA DREDGE MINE, Madera co, placer, Au

CHRISTMAS GIFT
c/o W V & L V Skinner, 247a N Virginia St, Reno, Nevada
MINE in Darwin dist, Inyo co, Ag, Pb

CITY BLUE GRAVEL MINE
Box 206, Redding
Officers: Harley G Hampton, R H Cochran, Donald Playlinsen
CITY BLUE GRAVEL MINE, 1 mi W of Redding, underground, Au
25-TON FLOT MILL

CLAIR, DON H
Box 5, Trona
MARGARET MINE, Inyo co, underground, Au, Ag

CLAYE, ROBERT, JR
427 Lane St, Yreka
GOLDEN RULE MINE, Siskiyou co, underground, Au

CLOUD, J R, JR
McKeon
BLUE EYES MINE, Placer co, placer, Au

CLOVERDALE MINE
Cloverdale
Gen mgr & partner: Andrew Rocca
Supt & partner: Joseph Garcia
Partner: Joseph Schor
MINE near Cloverdale, Hg
70-TON ROTARY FURNACE

COEUR, NEL
Box 196, Sonora
LUCKY STRIKE MINE, Tuolumne dist, underground, Au

COFFER, BERT
2902-E St, Sacramento,
OLD GOLD MINE, Sierra co, placer, Au

COLE, STUB
Youngs P O
IRISH SLIDE MINE, El Dorado co, placer, Au

COLLINS, JOHN T
Julian
ELLA GROUP MINE, San Diego co, underground, Au, Ag

COLORADO GROUP
Cosos dist, Inyo co
Operators: H J Wright & Thomas Taylor, Panamint Springs
Pb

CONLEY, R M
850 "I" St, Crescent City
CONLEY PROPERTY, Siskiyou co, placer, Au

CONN, A J
Amboy
WAR EAGLE MINE, San Bernardino co, Ag, Pb

CONSOLIDATED ROCK PRODUCTS CO
Azusa
CONSOLIDATED ROCK PLANT, Los Angeles co, Au (by-product)

CONSOLIDATED TUNGSTEN
Box 366, Dinuba
Owner: Joe D Spitler
MINE 23 mi E of Dinuba, Tulare co, W
C L Tibbals, mine fore & engr
50-TON GRAV PLANT
Ellis Sterling, mill supt

COOLEY, ROBERT D
Rt 2, Yreka
ROBERT D MINE, Siskiyou co, Au

COPPER BASIN MINE
San Bernardino co
Operators: E A Dilts & W H Hile, Parker, Arizona
Cu

CORDERO MINING CO
57 Post St, San Francisco
(For officers, see Nev listing)
MINE, 18 mi E of Hollister, underground, Sb

CORDILL, ROBERT H
Nipton
H & H SILVER MINE, San Bernardino co, Ag, Cu

CORONADO COPPER & ZINC CO
Bella Vista, Shasta co
Pres & gen mgr: Roy W Moore
VP: Henry T Mudd
Gen supt: Kenneth C Richmond
Purch agt: A L Davidson
AFTERTHOUGHT MINE UNIT, 22 mi NE of Redding, underground, Zn, Cu, Pb, Ag, Au
80-TON FLOT MILL
R Kenneth McCallum, mill supt

COSUMNES GOLD DREDGING CO
485 California St, San Francisco 4
Pres: G M Standifer
Gen mgr: A W Hopfield
PLACER MINE, Slough House, 10,000-yd bucket dredge, Au

COSUMNES MINES, INC
Grizzly Flats
COSUMNES MINE, East Belt dist, El Dorado co, Au, Ag

COURSON, W W
Box 202, Randsburg
NANCY HANKS MINE, Kern co, underground, Au, Ag

CRABTREE & SULLIVAN
Jackson, Amador co
Mn

CRAIG, C M
2457 Portola Way, Sacramento
BRIGHTON SAND & GRAVEL PLANT, DEL PASO PLANT, Sacramento co, Au (by-product)
HAGGIN & PERKINS GRAVEL PLANTS, Sacramento co

CRAWFORD, N B
Arlington
BIG BUTTE MINE, San Bernardino co, Cu

CRESCENT PACIFIC MINING CO
607 Newhall Bldg, San Francisco
Pres: E L Oliver
Gen mgr: B L Eastman
Secy: J N Dicks
Dir: John Daniel
MIDDLE YUBA MINE, c/o B L Eastman, Nevada City, dragline, Au
L A Smith, mine supt
Prod: 100-200 ounces daily during low water

CREVISTON, M & O
Camptonville
MARY JANE GROUP, Sierra co, placer, Au

CROOKS, ROBERT S
Happy Camp
LUCKY BOY MINE, Siskiyou co, placer, Au

CROW, M V
Box 690, Nevada City
LOCKE MINE, Sierra co, placer, Au

CRUMPTON MINE
c/o Victor Crumpton, Happy Camp
MINE in Klamath River dist, Siskiyou co, Au, Ag

CRYSTAL MINE
Box 93, Healdsburg
MINE 18 mi NE of Healdsburg, Hg
H A Samson, supt

CULVER-BEAR MINING CO
Cloverdale
Pres: C E Humbert
C A Baumeister, mgr
Hg
20-TON SMELTER

DAILEY, HERMIS W
Burnt Ranch, Trinity co
LAST CHANCE MINE, placer, Au
SURPRISE COPPER MINE, underground, Cu

DANCER, C
Box 104, Grass Valley
PAY MINING CLAIM, Nevada co, placer, Au

DARRINGTON, L
Folsom
JOHN AVERY PROPERTY, Placer co, placer, Au

DARWIN ANTIMONY NO 1
5146 N Main St, Santa Ana
Operator: James B Utt
Sb

DAVIDSON, BERT
Nevada City
SADIE D MINE, Nevada co, underground, Au

DAVIES, TOM
Caliente
JUAN DOSE MINE, Kern co, underground, Au, Ag
MINNIE ELLEN MINE, Tulare co

DAY, ROBERT
Mokelumne Hill
PRINDLE RANCH MINE, Calaveras co, placer, Au

DEER TRAIL MINING CO
Box 191, Yreka
Gen mgr: Don Adler, 1932 2nd Ave, Seattle, Wash
DEER TRAIL MINE at Yreka, Au, Ag, Pb
Carl W Yates, Yreka, cons engr

DEFENSE MINE
c/o Foreman & Skinner, 1354 2nd Ave, Salt Lake City, Utah
MINE in Modoc dist, Inyo co, Au, Ag, Cu, Pb

DESERT MINE
H Trehearne, Nipton
A H Smith, 366 Parke St, Pasadena
Sb

DESERT TALC & CLAY CO
Pomona
TALC MINE at Yucca Grove, San Bernardino co

DEWAR, BENNETT & GUYTON
Eldorado
INDEPENDENCE MINE, Mother Lode dist, El Dorado co, Au, Ag

DEWEY, FRANK A
Geyser Road, Cloverdale
DEWEY GEYSER MINE, Cloverdale, underground & open-pit, Hg
20-TON COTTRELL FURNACE
Under dev

DEWITT, O B
Nipton
CARBONATE KING MINE, San Bernardino co, underground, Ag, Pb

DIAZ, R
Idria
AURORA MINE, Hg

DICALITE DIV, GREAT LAKES CARBON CORP
612 S Flower, Los Angeles 17
Pres: Geo Skakel
Operations mgr: McKinley Stockton
Gen mgr: A R Bollaert
Purch agt: T D Moir
OPEN PIT, Diatomaceous earth
D F Dyrsmid, ch engr

DILTZ ORO GRANDE MINING CO
414 21st St, Merced
Operator: John J Fulham, Box 226, Mariposa
DILTZ ORO GRANDE MINE, Mother Lode dist, Mariposa co, Au

DOHERTY, C W & EDWARD MORRICE, JR
Forest Hill
MARIGOLD QUARTZ MINE, Placer co, underground, Au

DOMINGO MINE
c/o J O'Brien or Richardson Bros, Hornitos
MINE near Hornitos, underground, Au
MILL, under construction

DONNER, H L
Milton via Farmington
DONNER MINE & LOST LOG MINE, Calaveras co, Au

DORCH, WILLIAM
Sawyers Bar
RAINBOW GROUP MINES, Siskiyou co, placer, Au

DOWDEL, J V & M M FARISS
Hayfork
HOME EXTENSION MINE, Trinity co, placer, Au

DRUMMOND MINING CO
444 40th Ave, San Francisco 21
Pres: Frank Lintini
Gen mgr: Walter A E Meyer
DRUMMOND MINE, Box 222, Foresthill, Au, Ag
Michael Tanda, mine fore
50-TON FLOT MILL
Under dev

DUBOIS MINES
West Point
Operator: Ernest H Dubois
LOUISE MARGARET CLAIM, E Belt dist, underground, Au

DYSERT, N S
Sawyers Bar
EMMA GROUP, Siskiyou co, Au

EAGLEBIRD MINE
804 E St, Marysville
MINE is 10 mi SE of Downieville, Sierra co
underground, development ore only, Au, Ag
GRAV MILL, 1-ton per hour

EAGLE MINING CO
Bishop
Gen mgr: Frank Nelson
EAGLE MINE #1 & #2, 20 mi S of Big Pine, Ag, Au, Pb
SMALL MILL built in 1951
Under dev

EDWARDS, WILLIAM G
1560 Clarke St, San Leandro
FOUR HILLS MINE, Sierra co, underground, Au

EKEL, ALVAH G
Ione
LANCHA PLANA MINE, Amador co, placer, (tailings), Au
HILL TOP MINE, Calaveras co, placer, Au

EL DIABLO MINING CO
Box 567, Bishop
Pres: W A Trout
Gen mgr: H O Hohanson
MINE near Bishop, W
C H Olds, Jr, mine supt
50-TON CONCENTRATOR employing magnetic separation

EL DORADO ARGONAUT MINE
c/o Victor J Pedri, Georgetown
EL DORADO ARGONAUT MINE, El Dorado co, underground, Au

EL ENCINO CO
San Andreas
EL ENCINO BLUE GRAVEL MINE, Calaveras co, placer, Au

ELLIS, L G
Star Rt, Oro Grande
PAY CHECKER CLAIM, San Bernardino co, underground, Au, Ag

EMMA NO 1 & NO 2
Box 640, Palo Alto
(see Fisher Research Laboratories)

EMPIRE STAR MINES CO, LTD
14 Wall St, New York 5, N Y
Pres: J A Mann
Gen mgr: H R Fitzpatrick
Purch agt: William Carman
Local address: Empire Star Mines Co, Ltd
Box 1027, Grass Valley
(see Newmont Mining Corp, Calif)
EMPIRE STAR MINE at Grass Valley, Au
DONNEBRODGE MINE, Yuba co, Au
B Dellinger, asst mgr
R B Fulton, mine supt
Albert Hampton, mine fore
Thomas Thompson, mine fore
Morton White, engr
Phil Keast, mech engr
Leo Mann, elec engr
TWO 500-TON FLOT-CYANIDE MILLS
Chester Edwards, mill supt
Geo Larsen, assy
James T Curry, met

ENNIS, C
North San Juan
COME & GET IT CLAIM, Nevada co, underground, Au

ENTERPRISE MINING CORP
Cartago
CERRO GORDO MINE, Cerro Gordo dist, Inyo co, Ag, Pb

ERICKSON, JOHN
Quincy
PILOT PEAK MINE, Plumas co, placer, Au

ESCOBAR, MRS MABEL
Coulterville
BIG CHICK MINE, Mariposa co, placer, Au

ESTEY, CLYDE E
Box 453, Camptonville
SOLIDARITY GROUP & PINE FLAT #3 MINES, Yuba co, placers, Au

EUREKA LEAD & ZINC MINE
Rt 1, Box 89, Glendora
Owners: H H Shuck, & F D Shuck
Ag, Cu, Pb, Zn

FAIR OAKS GRAVEL CO
Rt 1, Box 553, Fair Oaks
FAIR OAKS GRAVEL PLANT, Sacramento co, Au (by-product)

FAIRVIEW CHROME MINE
640 Lane St, Yreka
Owner: H E Ellickson
FAIRVIEW CHROME MINE in Hamburg, Siskiyou co

FAIRVIEW PLACERS
Lewiston
(a joint venture of the Sunshine Mining Co, Kellogg, Idaho; The Lehman Corp, New York City; & The Idaho Canadian Dredging co, Boise, Idaho)
Pres & local mgr: H H Murphy
VP & mine supt: Miles M Young
Secy: George E Murphy
PLACER MINE 10 mi N of Lewiston, 8,000-yd bucket dredge, Au, Ag
Willard J Bennett, asst mine supt

FEASLER, ARTHUR G
397 Bartlett Ave, Sunnyvale
EL DORADO MINE, Sierra co, placer, Au

FERNANDEZ, FRANK C
2118 Navy St, Santa Monica
MONO PIUTE RAINBOW MINE, Mono co, underground, Au, Ag

FIDELITY MINE
Columbia
Mgr: Wayne Stobough
Au, Ag
Vernon Ray, mine supt
3-TON GRAV MILL

FINLEY & VIGNICH
Panamint Springs, via Lone Pine
MINNIETTA MINE, underground, Au, Ag, Pb
Dave Baker, engr
GRAV MILL
Clayton Dunham, mill supt

FINN, TED
Forks of Salmon
GOOD LUCK MINE, Siskiyou co, placer, Au

FISCHER MINES, LTD
Denny
Partner & mgr: William Fischer
Partner: Ned Yenter
Au, Ag, Cu
Under dev

FISHER RESEARCH LABORATORY, INC
1961 University Ave, Palo Alto
SPREAD EAGLE GOLD MINE 5 mi NW of Mariposa
EMMA #1 & #2 & EMMA MILLSITE, adjoining site, leased from Brobeck, Phleger, & Harrison, Crocker Bldg, San Francisco

FITZWATER, G W
Campo Seco
PEERLESS PLACER CLAIM MINE, Calaveras co, Au

FLINTKOTE CO
55th & Alameda, Los Angeles
VOORHEIS MINE near Copperopolis, Asbestos

FOREMAN & SKINNER
1354 2nd Ave, Salt Lake City, Utah
Pres: L D Foreman
DEFENSE MINE, 11 mi S of Panamint Springs, underground, Ag, Pb
R L Foreman, mine supt
SMELTER at Selby

FORKNER, R L
Box 145, Grass Valley
FRENCH BAR MINE, Nevada co, placer, Au

FOSS, A L
Lone Pine
SURPRISE MINE, 11 mi SW of Panamint Springs, Inyo co, underground, Pb, Ag, Au

FOSTER MINES & GLORY TINTIC MINE
1130 Niagara St, Burbank
Owner: Foster Estate & J B Marston
MINE at Valley Wells via Nipton, open-pit, Au, Ag, Cu, Pb, V
50-TON CYANIDE MILL
Under dev

FRASER, F W
Orleans
ORCUTT MINE, Humboldt co, placer, Au

FRASER, WISE & SHOREY
Box 64, Randsburg
NEW DEAL #1, 2, 3 & YELLOW ASTER MINES, Randsburg dist, Kern co, Au, Ag

FRAZIER, CLIFF
North San Juan
TRUDE (Bigelow) MINE, Nevada co, placer, Au

FREDERICKS, R E
3819 34th St, Sacramento
STRAWBERRY BAR MINE, (Bridgeport), Nevada co, placer, Au

FRESNO MINING CO
415 Brix Bldg, Fresno
Gen mgr & consulting engr: David W Baker, Reno, Nevada
STRAWBERRY MINE, Madero co, Bass Lake, underground, W
M Richardson, mine supt
MILL
Homer Salisbury, mill supt

FRONTZ, GEORGE M
Box 21, Greenwood
CLYSDALE MINE, El Dorado co, underground, Au

FRYE, HARVEY V
c/o Inskip Inn, Stirling City
MONEY MUSK MINE, Butte co, Placer, Au

GAMBLE, S F
Junction City
GOLD DOLLAR MINE, Trinity co, Au

GARESIO, ALBERT A
Downieville Star Rt, Nevada City
AETNA MINE, 4 mi W of Nevada City, underground, Au, Ag, Cu
Under dev

GARIBALDI BROS
Volcano
GARIBALDI MINE, Amador co, placer Au

GARIBALDI, TONY
Box 146, Pioneer
EMELAINE QUARTZ MINE, E Belt Dist, underground, Au

GARRETT, HORD, RALSTON & RALSTON
Box 103, Johannesburg
PIONEER MINE, 1/4 mi E of Johannesburg, underground, Au, W
GRAV MILL

GASTONQUAY, ERNEST
Sierra City
PRIDE MINE, Sierra co, placer, Au

GENERAL DREDGING CO
Natoma
Partner: A F Giddings, Natoma
Partner: W H Haines, Box 151, Sacramento
Partner: O J Boucher, Natoma
PLACER MINE 2 mi from Folsom, dragline, Au, Ag

GIDDENS, MAYNARD
N Bloomfield via Nevada City
MURRAY-REMKI MINE, Nevada co, placer, Au

GLENN-STEINTERF CO
3134 E 10th St, Oakland 1
Gen mgr: G G Glenn
Gen supt: R Jergentz
MARBLE SPRINGS MINE, 12 mi E of Coulterville, underground, Au, Ag, Pd
Wm Beattry, mine supt
Ed Jergentz, mech engr
Francis Frederiks, geol
FLOT MILL

GOLD COIN MINING & MILLING CO
Greenwood
GOLD COIN MINE, El Dorado co, underground, Au

GOLD HILL DREDGING CO
311 California St, San Francisco
Pres: E B DeGolia
VP & gen mgr: J J Coney
Secy: L H Kerdell
Dir: Stanley Miller
Dir: Walter W Johnson
Purch agt: Edw O Perkins
PLACER PROPERTY along Mokelumne River in San Joaquin co, bucketline, Au, Ag
H L Coney, supt

GOLD MEADOWS MINING & MILLING CO
2539 I St, Sacramento
Pres & mgr: Joseph Domich
Dir: Wesley Buffington
Dir: C B Hall
BOWMAN MINE, Forest Hill
Under dev

GOLD SUGAR, GRAND STRIKE MINE & MILL, LTD
c/o Mrs Esther B McDonald, Box A, Camarillo
Pres & Owner: G L Herrington
Secy: Mrs Esther B McDonald
GOLD SUGAR GRAND STRIKE GROUP, 9 mi SE of Julian, underground, Au, Ag
20-TON GRAV MILL
Idle

GOLD TRAILS MINE DEVELOPMENT
1253 N Harper Ave, Los Angeles
GOLD TRAIL #2 MINE, San Bernardino co, underground, Au, Cu

GOLDEN CENTER MINE
745 Rowan Bldg, Los Angeles
Owner: Cooley Butler
MINE at Grass Valley, Au
150-TON CYANIDE FLOT MILL

GOLDEN STATE MINING CO
1653 San Antone, San Jose
QUAIL MINE, Mariposa co, underground, Au
RUTH PIERCE MINE, Hornitos, underground, Au
Owners: George Marshall, Henry E Marshall & Stanley & Clarence Silva
BALL MILL

GOLDEN WEST MINES CO
840 Erie St, Apt 4, Oakland
Pres: Ray R Spangler
PIONEER #3 MINE, Klamath River dist, Siskiyou co, placer, Au, Ag

GOLDFIELD CONSOLIDATED MINES CO
206 N Virginia St, Reno, Nevada
Pres: George Wingfield
Secy: George M Sprading
VP & gen mgr: E A Julian, 1 Montgomery, San Francisco
OMEGA MINE, Nevada co, hydraulic, Au
RED HILL MINE, Trinity co, Au

GOLER PLACER
Box 157, Randsburg
Gen mgr & mine engr: Darrell V Cole
GOLER PLACER PROPERTY, 9 mi NW of Randsburg, dry land dredge with carryall (100 yds hourly), Au

GOODHUE, J W
Taylorsville, Plumas co
PILOT MINE at Genesee, underground, Au, Ag, Cu

GOULD, H W & CO
(See Klau Mine, Inc)
1000 Mills Bldg, San Francisco 4
Pres: Bruce A Gould
VP: H W Gould
Secy-treas & purch agt: M B Gould
KLAU MINE, San Luis Obispo co, Hg
M J O'Boyle, engr
Idle

GRAHAM, CHARLES A
330 Alexander St, Nevada City
SELBY HILL MINE, Nevada co, placer, Au

GRANDVIEW MINING CO
c/o J S Wisdom, Big Pine
BUSTER MINES #1, 2, 3, Inyo co, Ag, Pb
CHALCEDONY MINES #1 & 2, Inyo co

GRANITE KING
c/o Frank Carr, Box 93, Mariposa
MINE in Mariposa co, Au, Ag

GRANTHAM, LOUISE
809 E 6th St, Ontario
RED EAGLE GROUP, Gold Hill, Inyo co, Au, Pb

GREATER 49er PLACER, THE
Box 1731, Fresno
Owner & engr: Andrew Thickstun
MINE at Strawberry Valley, dragline, Au

GREEN, SHERWOOD
219 S "D" St, Madera
ACE PLACER CLAIM MINE, Madera co, placer, Au

GREENHORN DREDGING CO
Box 892, Auburn
PLACER MINE 11 mi S of Placerville, equipped with doodlebug, Au
BARKLEY PROPERTY at Youngs

GROSS, KENNETH
Barrego Star Rt, Julian
KENTUCK MINE, San Diego co, underground, Au, Ag

GUILDFORD GROUP OF GOLD MINES
Box 191, Placerville
Owners: L F S Hollard & Dr A A McKinnon
MINES: Poverty Point, Fortuna, Humming Bird, Baltic, Bantam, Rose Anita, 2-4 mi S of Placerville, underground, Au

HANGING VALLEY MINING CO
1245 W 87th St, Los Angeles 47
HANGING VALLEY MINE, Inyo co, Bishop, W

HANSON, E
c/o Gen Del, Foresthill
BIG CHIEF MINE, Placer co, placer, Au

HARRIS, D B
Box 4, Trona
BRIDGE MINE, Inyo co, underground, Au, Ag

HARRIS, JOHN
Redding
Owner & gen mgr: John Harris
KING MINE, Box 297, Yreka, Au, Ag, Pb
Carl W Yates, cons engr
MILTON GRAV MILL

HARRY, ROSS
Sonora
LA RAN MINE, Tuolumne co, underground, Au

HATHAWAY, O
Downieville
BUCKSHOT MINE, Sierra co, placer, Au

HAYDEN HILL MINES
Box 224, Adin
Pres & gen mgr: Thomas Goff
Dir: Herstle Jones
Dir: R Zanini
HAYDEN HILL MINE 15 mi NE of Adin, underground, Au, Ag
125-TON CYANIDE MILL
Joe Shale, met

HAYES, BEN W
Mariposa
BOULDER PLACER CLAIM MINE, Mariposa co, Au

HERBERT, O A
Box 87, Plymouth
WOLIN PROPERTY, Mother Lode dist, placer, Au

HERBERT MINES
Rt 5, Box 150A, Porterville
HERBERT MINE, Tulare co, Porterville, W

HESS, MARTIN L
Box 931, Weldon
GLORY HOLE & TUNGSTEN QUEEN, 14 mi S of Weldon, open pit, W
Under dev

HESS, MAX
Box 333, Randsburg
GOLD COIN MINE, Lode, Randsburg dist, Kern co

HEUCK, DEAN D
Junction City
CANYON CREEK DEV CO MINE, Trinity co, placer, Au

HOLIDAY, ELMER
c/o Gen Del, Madera
VIRGIL ANDERSON & CASAURANC PROPERTIES, Madera co, placers, Au

HOLMESTAKE MINING CO
P O Box 308, Winterhaven
Pres & gen mgr: Kenneth A Holmes, Yuma, Arizona
CARGO MUCHACHO GROUP MINE, Imperial co, underground, Au, Ag
Les Hardy, Yuma, Ariz, supt

HOLSTROM MINING & MILLING, INC
4380 W Adams St, Los Angeles, 16
Pres & gen mgr: Charles H Harrington
Secy-treas: Floyd Holstrom
Purch agt & mine fore: H F Sroka
MODEL MINE, Johannesburg, Au, Ag
PIONEER MINE, Desert Center, Au, Ag
Wm McGowen, mgr engr, & mine supt
50-TON CYANIDE MILL under erection
W R Manuel, mill supt
Harvey K Griffith, met & engr
Smith Emery Co, assy

HOWELL BROS
Box 73, Raymond
CHALFANT RANCH, Madera co, placer, Au

HOWIE MINING CO
Room 200, 205 S Beverly Dr, Beverly Hills
Pres: Robert Hodge
Gen mgr: Ross Prout
HOWIE GROUP MINES, Nevada co under-ground, placer, Au

HUNTER, BEV
Olancha
LEMOYNE CLAIM, Inyo co, Ag, Pb

HUNTLEY INDUSTRIAL MINERALS, INC
Box 305, Bishop
Pres, gen mgr & purch agt: Wright H Huntley
Secy-treas: L G Hummel
PACIFIC PYROPHYLLITE MINE, 18 mi NW of Bishop, open pit, Pyrophyllite
David T Davis, mine & mill fore
Prod: 100 tons daily

HYLAND, GEORGE
6105 Castle Dr, Oakland 11
IRELAN MINE, Sierra co, underground, Au

IDAHO MARYLAND MINES CORP
362 Russ Bldg, San Francisco
Pres: E L Oliver
VP: G S Borden
VP: Fred W McNear
Gen mgr: C L Allan
IDAHO MARYLAND-NEW BRUNSWICK, Box 1028, Grass Valley, Au, Ag
Edward C Whiting, supt
Roger K Whitmore, fore
GRAV-FLOT CYANIDE PLANT
Richard Krebs, mill supt
F S Barnard, asst mill supt

IGO MINING CO
Box 1412, Redding
Pres: R B Tupper
Gen mgr: M E Hawe
Dir: R H Olson
BIG WYKE MINE, Igo, Au, Ag, Pb, Zn
Under dev
YANKEE JOHN MINE, Igo dist, Shasta co, Au, Ag, Pb

INYO MARBLE CO
726-732 E 29th St, Los Angeles 11
Pres: D H Dunn
VP: R D Penny
Secy: G W Mead
Treas: A W Thompson
CONSOLIDATED INYO MARBLE & DOLOMITE PROPERTIES, Dolomite, via Lone Pine, Inyo co, open pit, marble & dolomite
Purch agt, mine & mill supt: D H Dunn
GRAV MILL, 75-ton daily production
Prod: 150-TONS

IRON DUKE MINING CO
1991 E Glenoaks Blvd, Glendale 6
Pres: Grover Kihorny
IRON DUKE MINE 15 mi N of Hornitos, Mariposa co, underground, Au, Ag
HEAVY MEDIA MILL
DEWATERING PLANT
Under dev

IVES, E E
Box 774, Big Pine
CLEVELAND MINE, Inyo co, Au, Ag

JACKSON, A J
1614 Trinity, Redding
BRANCH PLACER MINE, Shasta co, Au, Ag

JACKSON & AUSTIN MILLING CO
Jackson
KENNEDY MINE, Amador co, Lode (tailings) Au

JACKSON, R H
Midpines
MEXICAN DIGGINGS MINE, Mariposa co, underground, Au

JANCIGAYM, FRANK
Jamestown
FARRINGTON MINE, Tuolumne co, Au

JERSEY LILLY MINE
Randsburg
S W Grow, lessee

JOHNS-MANVILLE
22 E 40th St, New York 16, N Y
Ch of bd: Lewis H Brown
Pres: H W Lea
Gen mgr: O B Westmont
Purch agt: S F Curtis
LOMPOC MINE, Lompoc, Asbestos, diatomaceous silica, open pit

JOHNSON, FLOYD
La Porte
WINKEYE MINE, Sierra co, placer, Au

JOHNSON, LOUIS
La Porte
ST ELEMO MINE, Sierra co, placer, Au

JOHNSON MANGANESE MINING CO
255 California St, San Francisco 11
Owner: A G Johnson
GAMLIN MINE in Eldorado co, Au
COFFEE GULCH MINE in Amador co, Au
Under dev

JORDAN, ROBERT C
Box 277, Ahwanee
JORDAN DREDGE, Mariposa co, Au

JOUBERT, JESSIE R
Camptonville
PLACER MINE, Sierra co, Au

JOUBERT PLACER MINE
Sawyers Bar, Siskiyou co
Owner & mgr: Louis J Joubert
GRAVEL PLACER, hydraulic, Au, Ag
Operator: Lester Strawbecker

JUDGE HYDRAULIC MINE
Sawyers Bar
PLACER in Siskiyou co, Au

K C COLUMBIA MINES, INC
614 Stock Exchange Bldg, Portland, Ore
K C COLUMBIA GROUP MINES, Klamath River, underground, Au

KAISER ALUMINUM & CHEMICAL CORP
Kaiser Bldg, 1924 Broadway, Oakland 12
Pres: Henry J Kaiser
Gen mgr: D A Rhoades
Mgr: Ray Woodman
NATIVIDAD DOLOMITE QUARRY, Box 1531, Salinas, open pit 4 mi N of Salinas, bucketline, Dolomite, lime
D M Kerr, mine supt
GRAV MILL
FURNACE at Permanente
125,000 tons yearly

KAISER STEEL CORP
1924 Broadway, Oakland 12
Pres: Henry J Kaiser, Oakland
Exec VP: E E Trefethen, Jr, Oakland
VP & gen mgr: Jack L Ashby, Oakland
VP: Edgar F Kaiser, Willow Run
VP: Henry J Kaiser, Jr, Los Angeles
VP: A B Ordway, Oakland
VP: C F Borden, Oakland
VP & Secy: G G Sherwood, Oakland
VP & Treas: Atwood Austin, Oakland
VP: Chad F Calhoun, Washington
Gen purch agt: G W Kelly, Oakland
Chief Engr: George Havas, Oakland
EAGLE MOUNTAIN MINE, Box 428, Desert Center, open pit, iron ore
J G Hansen, mine supt
C J Short, asst mine supt
W A Horton, mine fore
C A Scott, mast mech
O E Olson, railroad gen fore
SMELTER: Box 217, Fontana
Kenneth B Powell, supt raw materials
Geo Huseman, mill engr
Prod: 4,500 net tons per day

KEANE EXTENSION MINING CO
Box 224, Beatty, Nevada
Owners & operators: Michael Harris & James E Harris
KEANE EXTENTION MINE, 29 mi SW of Beatty, Nevada, or in Death Valley, Inyo co, underground, Au, Pb, Fe, Ag
SMELTER, 29 tons lead & 40 tons iron

KELLY, T C
Hayfork
KELLY MINE, Trinity co, Au

KENNEDY MINES
c/o W H Kirklin, Scott Bar
KENNEDY MINE, Siskiyou co, placer, Au

KENYON, HARRY R & ROY RITTER
Cottonwood
HUMMINGBIRD MINE, Shasta co, underground, Au

KEYSTONE MINE
Copperopolis
KEYSTONE MINE, underground, Cu
Under dev

KING SOLOMON LEASE
Box 101, Johannesburg
YELLOW ASTER MINE, Kern co, underground, Au, Ag

KIRKPATRICK, A W & CHARLES O COOLEY
Rt 2, Yreka
1000 to 10 & ILAH MINES, Siskiyou co, Au, Ag

KIRKPATRICK MINING CO
Box 1919, Sacramento
KIRKPATRICK MINE, Downieville dist, Sierra co, placer, Au

KITCHING, R E
Box 783, Big Pine
CRATER GROUP, Inyo co, sulfur

KLAU MINE, INC
(See Gould, H W & Co)
1000 Mills Bldg, San Francisco 4
Pres: Bruce A Gould
VP: H W Gould
Secy-treas: M B Gould
HELEN MINE, Lake co, Hg, Idle
LA JOYA MINE, Napa co, Hg, Idle
VIRGILIA MINE, Plumas co, Au, Leasers
STANDART MINE, Plumas co, Au, Idle

KNOXVILLE MINE
Monticello
Owner: George E Gamble
Owner: W V Wilson
QUICKSILVER MINE near Monticello equipped with furnace
T S Schribner, supt

KORFIST, JERRY
Baker
MINE, 33 mi NE of Baker, underground, Fluorspar, Under dev

KUBON & JURVA
4104 W 104th St, Inglewood
RAND MINE, Kern co, Glenville, W

KYLE, ROGER Q
Box 302, Globe, Arizona
MANGANESE & TREMOLITE MINES 22 mi N of Blythe
Under dev

LA GRANGE GOLD DREDGING CO
Mills Tower Bldg, San Francisco
Pres: Henry Eickhoff, Jr
Secy-treas: Jefferson Doolittle
PLACER MINE near La Grange, dragline, Au, Pt, Iridium

LACO MINING CO
Rt 3, Box 835, Los Gatos
Pres: H M Mason
VP: George F Kirk
Secy: Howard E Meade
GUADALUPE MINE, open pit, Hg
80-TON FURNACE

LAKIN, RAYMOND T
Rt 1, Ione
LANCHA PLANA MINE, Amador co, placer, Au

LANHAM, W I
Camptonville
NEVADA MINES, Yuba co, Au

LARGHERE, GUISEPPI
Rt 1, Box 142, Nevada City
EAGLE BIRD MINE, (dump), Downieville dist, Sierra co, underground, Au

LAURIDSON, LAUREN C
Rt 2, Box 1340, Fair Oaks
JAMES O'BRIEN MINE, El Dorado co, placer, Au

LAVA CAP GOLD MINING CORP
River Road, Ansonia, Conn
Pres: Leslie H Jockmus
Secy-treas: Harry C Powley, Jr
MINE at Nevada City, Au, Ag
400-TON CYANIDE FLOT MILL
Idle

LAVERONI, T A
Rt 1, Sonora
JOSEPH MINE, Tuolumne co, Au

LAWRENCE, JOSEPH S
Pine Grove
HAPPY JOE & JUMBO CLAIMS, Amador co, underground, Au

LEEDOM, W R
Box 1, Chinese Camp
EAGLE SHAWMUT MINE, Tuolumne co, under-ground, Au

LEWIS, FOSTER L
2307 Shasta St, Redding
STARVATION MINE, Trinity co, underground, Au

LEWIS & HOEFFLER MINE CO
Crescentmills
L & L MINE, Plumas co, Au, Ag

LIDDICOAT GOLD MINES CO, INC
Rt A, Box 27, Greenwood
Pres: Joseph L Liddicoat
VP: L Glen McClain
Secy: Lillie M Liddicoat
GRIT MINE, Rt A, Box 27, Greenwood, underground, Au
J F Siegfried, engr
60-TON GRAV FLOT MILL
Under dev

LILLY, E L
1640 E Poplar St, Stockton
PLACER MINE 7 mi NW of Plymouth, 16 cu yd dragline, Au, Ag

LINKHARD, FRED & E H MESSENGER
Kirby, Oregon
CHROME MINE in Siskiyou & Del Norte co

LINNEL, R J & EARL H COLEMAN
Baker
MORMON PLACER MINE, San Bern co, Au, Ag, Cu

LIPPINCOTT LEAD MINES
Box 1811, Santa Ana
Owner: George Lippincott
LEAD KING MINES, Death Valley, Ag, Pb, Zn
Prod: 30 tons daily
GRAV FLOT MILL, furnace operated, 25 tons daily

LITTLE, EMMOR W & SONS
Box 584, Yreka
STAR CLAIM, at Old Town Deadwood, placer 11 mi W of Yreka, 16 cu yd dragline, Au
SLATE MOUNTAIN MINE, Eldorado co, 8 mi NE of Georgetown, underground, Au, (Idle)
10 STAMP MILL

LITTLE, J Q
Clark Mountain Station, Nipton
Lessee: J Q Little
CARBONATE KING ZINC MINE (owned by Crystal Cave Mining Co), San Bernardino co, Ag, Pb, Zn

LIVE OAK MINES, INC
Sand Canyon, Rt 1, Saugus
Pres, gen mgr & purch agt: Challoner Thompson
Counsel: Howard C Ellis
LIVE OAK MINES, 12 mi SE of Saugus, open-pit, Ilmenite, Magnetite, Zirconium
S Sklarew, met
Under dev

LOG CABIN MINES CO
431 W Seventh St, Room 828, Los Angeles
Pres: S C Hall
Gen supt: Frank C Cassidy
LOG CABIN MINE, Leevining, Au, Ag
150-TON AMALGATION-CYANIDE MILL
Prod: 100-tons daily
Under dev

LOMAR MILLING CO
Box 39, Pine Grove
PORT ANN MINE, Amador co, Au

LOOMIS, L W
Placerville
CLAYTON MINE, W of Placerville, underground, Au

LOVE, DONALD F
(leasing from Roosevelt Mine, Inc)
Ludlow
BAGDAD-CHASE MINE, Ludlow, Au, Ag, Cu
H Jalmar & J Jackson, met
Prod: 500 tons monthly

LOW, F GILMAN
Box 224, Ahwahnee
NEW DEAL MINE, Au

LOWRY, GLENN C
P O Box 227, West Point
EMILY MINE, Amador underground, W

LUCKY GOLD HILL CO
648 Gray Ave, Yuba City
LUCKY GOLD HILL GROUP MINES, Sierra co, placer, Au

LYONS, FRANK & E B MATHERLY
1377 Norton St, Oroville
LYONS & MATHERLY DREDGE, Pillikan, Stodick & Benton Properties, El Dorado co, Au

MACEY, MRS E M
Box 52, Cedar Ridge
E M & E MINE, Yuba co, placer, Au

MACHEN, H E
North San Juan
BRIDGEPORT MINE, French Corral dist, Nevada co, Au

MAGEE MERCURY, INC
4163 Piedmont St, Oakland
Pres: Harry H Magee
VP & cons engr: B C Austin
Secy: H B Hucker
MINE at Guerneville, Hg
Thomas A Monahan, mgr
100-TON ROTARY FURNACE

MAID OF ORLEANS MINE
Alleghany
Owners: Irving D Wolf & Associates
Au
George Bartlett, supt
Under dev

MAIER & ARGO
Green Horn Mountain, Bakersfield, Kern co
Owner: Thomas Maier, 1911 San Pasqual St, Santa Barbara
HETTY LOU #2, 55 mi SE of Bakersfield, underground & open pit, St
Idle

MALONE MINE
Mariposa co
Glenn W De La Mare, Box 229, Mariposa
W C Johnson, Midpines
Au, Ag

MARALL, L S & V H
Forest Hill
FOREST HILL CHROME MINE at Forest Hill, Placer co, Cr

MARBLE SPRINGS MINE
c/o Click Henderson, Coulterville
MARBLE SPRINGS MINE at Coulterville, underground, Au
Under dev

MARBEL TUNGSTEN MINE
Bishop
MINE 13 mi SW of Bishop
A H Peterson, supt
John Utter, supt
Under dev

MARQUIS, J M
West Point
MARQUIS MINE, Calaveras co, underground, Au

MARTER MINING CO
701 Security Title Ins Bldg, 530 W 6th St, Los Angeles 14, Calif
Pres: Laurence B Martin
Gen mgr: H M Richter
MARTER-WHITE MINE, Bryman dist, San Bernardino co, open-pit
500-tons prod monthly
LUCERNITE MINE, North Lucerne Valley, San Bern co, open-pit, Mn, Ca Carbonate
100-tons prod monthly

MAR LEN MINES
Newcastle
MARY LEN MINE, Auburn dist, Placer co, Au, Ag

MASSERA, E F
Star Rt, Nevada City
COMET MINE, Nevada co, placer, Au

MASTOLIER, S
Tyler Rt, Nevada City
SALMON MINE, Nevada co, underground, Au

MATTHEWS, PEARCE & UNDERWOOD
Hollister
ANTELOPE MINE, 33 mi SE of Hollister, underground, Cu

McCONNELL, S W
Box 56, El Dorado
NASHVILLE MINE, El Dorado co, placer, Au

McCULLEY, JOE
Box 53, Darwin
EMPRESS MINE, 8 mi E of Darwin, underground, Pb, Zn, Ag, Cu, Au
BIG FOUR MINE, 15 mi E of Darwin, Panna Mint dist, Pb, Zn, Ag
OLD DEPENDABLE MINE, 23 mi SW of Furnace Creek Ranch, Death Valley, underground, Sb, Ag
Under dev

McFALL, C & R E GROND
Box 7392, El Cajon
EAGLE NEST CLAIMS #1-4, San Diego co, underground, Au, Ag

McFARLAND
Box 646, San Jose, Hg

McHENDRY, L W
Lewiston
HICKEY PLACER MINE, Trinity co, Au

McLAUGHLIN & APPLEGARTH
1628 Russ Bldg, San Francisco
Mgr & purch agt: George A Applegarth
McLAUGHLIN & APPLEGARTH MINE, 32 mi W Red Bluff, Cr

McPHERSON, DON
Trona
SMUGGLER GROUP MINES, San Bernardino co, underground, Ag

MENGIN, PIERRE
Happy Camp
PATSY MINE, Siskiyou co, placer, Au

MERIAN, A T
Strawberry Valley
JUMBO MINE, Plumas co, Au

MERRITT, ALFRED L
453 Scenic Ave, Piedmont 11
Owner & operator: Alfred L Merritt
BRUSH CREEK MINE, Goodyear's Bar, Sierra co, Au, Ag
Rinaldo Daneri, mine fore
W Spencer Hutchinson Jr, supt
90-TON GRAVITY MILL
E O Berger, mill fore
60-tons prod monthly
200-tons prod monthly

METZGER, CHRIST
Alleghany
MARIPOSA MINE, Sierra co, underground, Au

MID-STATE DREDGING CO
Rt 1, Box 12, Le Grand
MID-STATE DREDGE-THOMAS RANCH, Mariposa & Merced co, placer, Au

MILL CREEK MINING CO
564 Market St, Room 721, San Francisco
Pres: Harvey Sorensen
QUARTZ MILL MINE, Siskiyou co, underground, Au
Sam Stephner, engr

MINERAL MATERIALS CO
1145 Westminister Ave, Alhambra
Partner & mgr: C W Dunton
ATLAS SILICA QUARRY, 2 mi E of Oro Grande open-pit
700-tons prod daily
STARBRIGHT MINE, 25 mi N of Barstow, open-pit, W
30-tons prod daily

MINONA MINING CO
118 S School St, Grass Valley
BUCKEYE MILL MINE, Nevada co, placer, Au

MITCHELL, STEVENS & DREW BROS
Randsburg
CALIF CLAIM MINE, Kern co, underground, Au, Ag

MOAPA MINING CO
Box 325, Paso Robles
LA LIBERTAD MINE, San Luis Obispo co, Cambria, Hg

MODRELL & WARREN
Murphy's
Thomas Bishop property, Calaveras co, Au

MOHAWK MINES, INC
Nipton
Pres: T W Peterson
VP: Lorin Reber
Gen mgr & assy: S D Greenwood
Dir: Clair W Dunton
Dir: Hazen Stevens
MOHAWK MINE, c/o Clark Mt, Nipton, 65 mi S of Las Vegas, Nev, underground, Pb, Cu, Ag, Zn
Emerson A Ray, mine supt

MOLINI, H, N SCOTT & W E DUNNIGAN
Dyer, Nevada
ALEXANDER MINE, Inyo co, underground, Ag, Pb

MONUMENTAL MINES
Matthews, E C & Roy O Nelson, 520 F St, Eureka
MONUMENTAL MINE, 7 mi W of O'Brien, open-pit, Au, Ag
Under dev

MOON, E O
4233 Berryman, Culver City
KOLLEY MINE, San Bern co, Ag, Pb, Zn

MOONLIGHT MINING CO
Coulterville
MOONLIGHT MINE, Mariposa co, underground, Au

MORGAN GOLD MINING CO
Georgetown
Mgr: George P Morgan
Mine at Garden City, Au
Under dev

MORNING STAR MINING CORP
1210 Quinby Bldg, 560 S Grand St, Los Angeles
PIONEER LILYAMA MINE, El Dorado co, Au, Ag, Cu

MORRILL, M A
Rt 1, Box 103A, Laton
ELI MARIA CLAIM MINE, Mariposa co, underground, Au

MOUNT GAINES MINING CO
Hornitos
J P Hart, Box 2328, Reno, Nev, trustee
60-TON AMAL-FLOT MILL, Au, Ag
John L Dynan, mgr
Alex J Meagher, mine fore
Clarence S Guest, mill fore
T W Molthen, assy
40-tons prod daily

MT RAYMOND MINES
Box 727, Madera
STAR GROUP & BILEKO GROUP, near Madera, Au, Ag, Cu, Pb, Zn
J Wesley Smith, owner & mgr
L M Bradford, owner

MOUNTAIN COPPER CO, LTD
216 Pine St, San Francisco 4
Gen mgr: L T Kett
Asst mgr: J G Husehy
Purch agt: S D Dodds
HORNET MINE, Matheson, Shasta co, underground
C W McClung, supt
T P Bagley, mine fore
A Harrison, master mech
S C watson, engr
700-TON CRUSHING PL, Pyrites, 50% sulphur
400-tons prod daily

MOUNTAIN GOLD DREDGING CO
Sutter Creek
Pres: M J Garibaldi
Gen mgr: C R Garibaldi
PLACER MINE, 2 mi E of Valley Springs, dragline, Au
Bill Teller, mech engr
Under dev

MOUNTAIN KING MILL & MINE
410 Thorne Ave, Fresno
Pres: Chas W Stewart
Mine at Copperopolis, Calaveras co, Au, Ag
700-TON AMALGAMATION FLOT MILL
Thos B Rice, supt
H E Bush, engr
700-tons prod

MOUNTAIN VIEW LEAD MINE
Fish Springs dist, Inyo co
c/o Pritchett & Slater, Independence
Ag, Pb

MURRAY, HARRY
P O Box 323, Nevada City
MURRAY MINE, Nevada co, placer, Au

MUTH, TED
Somes Bar
RIVERSIDE MINE, Siskiyou co, placer, Au

NATIONAL MINES, INC
2332 Third Ave, Los Angeles 18
Pres: Charles H Harrington
Gen mgr: William E Hysong
Dir: Kenneth B Hysong
TECOPA MINE #1, Tecopa, open-pit, Perlite
Ralph C Harrington, mgr & mill supt
Bronislow Bedeynak, purch agt & mine fore
William R McGowen, mine supt & engr
John Wheat, mill fore
A V Herr, Laboratory assy
100-TON FURNACE
560-tons prod

NATOMAS CO
607 Forum Bldg, Sacramento
Pres & gen mgr: R G Smith
Secy: Wanda Durkee
GOLD DREDGING DIVISION
Mgr: Cyril Thomas
Mine at Natoma, Bucket dredge, Au

NELSON, FRANK F
RFD 1, Bishop
WESTWARD EAGLE #1 & 2, underground, open-pit, Au, Ag, Cu, Pb
GRAVITY MILL

NEVADA SCHEELITE
11320 S Alameda St, Los Angeles 2, W, concentrate

NEW CHAMPION MINING CO
West Point, Calaveras co
CENTENNIAL MINE at West Point, underground, Au, Ag, Pb
H G O'Hanlon Jr, mine supt
R H O'Hanlon, mill supt
Dean Aghetti, mine fore
FLOT MILL
Under dev, some prod

NEWCOMB, ZELMA
Downieville
NEWCOMB MINE, Sierra co, Au

NEW ERA MINING & MILLING CO
Big Pine
Mgr: W C Hove
NEW ERA MINE, Inyo co, underground, Au, Ag

NEW IDRIA QUICKSILVER MINING CO
58 Sutter St, San Francisco 4
Pres: Gordon I Gould
VP: E L Elliott
Secy & purch agt: Carl S Balch
NEW IDRIA MINE, Idria, San Benito co, underground, Quicksilver
400-TON ROTARY FURNACE

NEWMAN, OTTO L & SONS
Foresthill
MOHAWK MINE, 12 mi NE of Foresthill, placer, Au
Under dev

NEWMONT MINING CORP
14 Wall St, New York 5, N Y
Ch of bd: Charles F Ayer
Directors:
Mrs Thompson Biddle
James F Byrnes
Lucius D Clay
Philip Kraft
Henry Krumb
Arthur H Lockett
Mrs Peggy Morton
Gus Mrkvicka
Franz Schneider
Carrol Searls
Fred Searls, Jr
H DeWitt Smith
William T Smith
Mrs Wm Boyce Thompson
Albert H Wiggin
Pres: Fred Searls Jr
Exec VP: Franz Schneider
VP: H DeWitt Smith
Treas: Gus Mrkvicka
Secy: Carroll Searls
Asst secy-treas: William T Smith
Asst treas: Walter F Schmid
(See Empire Star Mines Co, Ltd, Calif; Magma Copper Co, Ariz; Idarado Mng Co, Colo; Goldfield Deep Mines Co, Nevada; Resurrection Mng Co, Colo)

NEW SUTHERLAND DIVIDE MINING CO
985 Mills Bldg, San Francisco
Pres: John E Gallois
Gen mgr: John L Desmond
CARBONATE & QUEEN of SHEBA MINES, Shoshone, Au, Ag, Pb
James C Gill, mine supt
William Hardy, met

NEW TRAIL MINING CO
c/o J D Loop, secy, Cima
NEW TRAIL & ANCHOR SHAFT MINES, Clark Mt Dist, San Bern co, Au, Ag, Pb

NICHOLS, FRANK
Sawyers Bar
NEW DIGGINS MINE, Siskiyou co, placer, A

NICKELL, E O
Foresthill, Baker Ranch
ORE PLACER MINE, Placer co, Au

NOBLES, ERNEST
Raymond
MERRICK BROWN PROPERTY, Madera co, placer, dredge, Au, Ag

NORMAN, J T
Cathay
NORMAN MINE, Mariposa co, underground, A

NORTHWESTERN MINING CO
905 2nd Ave Bldg, Seattle 4, Wash, Box 3191
Owner & gen mgr: Alfred W Peeler
BOULDER GULCH GROUP, Liberty dist, Siskiyou co
HYDRAULIC PLACER MINE, Sawyers Bar, Au, Ag
Richard T Bendl, mine supt

NYSTROM, GUST
Box 42, Big Oak Flat
MORHAM MINE, Big Oak Flat, Groveland, Au, Ag

OBARR, WILSON A
902 S Van Ness St, Santa Ana
LEON MINE, Riverside co, underground, Au, Ag

OCEAN VIEW MINE
Monterey co, Au, Ag
John R Lowe, Big Sur

O'DONNELL, JOHN
326 E Main St, Grass Valley
KATE HARDY MINE, Sierra co, underground, Au
BALL MILL

OLSON, ROY S
1176 Walnut Ave, Redding
BATTAMS PROPERTY, Redding dist, Shasta co, dredge, Au, Ag

ORA DEL LOMA CO
Del Loma
FRENCH BAR DEPOSIT, on Trinity River, E of Del Loma, placer, bucket on high-line, Au
WASH PL

ORIGINAL SIXTEEN-to-ONE MINE, INC
1611 Russ Bldg, San Francisco 4
Pres: H U Maxfield
Secy-treas: Jack Maxfield
Mine at Alleghany, Au, Ag
C A Bennett, gen supt & purch agt
Willard Van Doren, mine supt
John Hunley, mill supt
150-TON CONCENTRATING & AMAL PL

OWL SPRINGS CO
1078a Leighton Ave, Los Angeles 37
Pres & gen mgr: Harold W Orwig
Secy: H George Orwig
OWL SPRINGS MANGANESE MINES, Owl Springs, San Bernardino co, underground, open-pit, Mn
Edward Eisenhauer Jr, assy
50-TON CONCENTRATING & SINTERING PL
600-ton monthly prod

PACIFIC ATLANTIC METALS CORP
513 Central Bldg, Pasadena
Chairman: W W Kaye
Pres: E C Neckerman
COPPER BASIN, GOLD PEAK, COWBOY, EDITH, & BLACK HAWK MINES, Caliente, Au, Ag, Pb, Zn
Willard Hales, supt, Gold Peak & Cowboy Mines
H A Hamill, supt, Black Hawk Mine
FLOT MILL & REDUCTION PL

PACIFIC COAST BORAX CO
Div of Borax Consolidated Ltd, 510 W 6th St, Los Angeles 14
Pres & gen mgr: J M Gerstley
VP: P J O'Brien
Purch agt: J C Walker
Gen supt: C G Grim
BORON MINE, underground, Borate ores
G T Olen, mine engr
F A Belk, mech & elec engr
Vincent Morgan, assy
V C Rogers, mine supt
P A Conte, mine fore
GRAVITY MILL
L L Fusby, mill supt
E D Lemon, asst mill supt
N E Ross, master mech

PANAMINAS, INC
Eureka, Nevada, c/o Eureka Corp, Ltd
Pres: G W Tower
Gen mgr: G W Mitchell
ADAMSON MINE, Bishop, Wo

PARKER, BRUCE H
Midpines
CHILAMAN MINE, Mariposa co, placer, Au

PARKER, R W
Klamath River
DUMLUCK MINE, Siskiyou co, placer, Au

PARKER, WILLIAM F
Midpines
BUCKSKIN MINE, Mariposa co, placer, Au

PAULSON, C W
789 Bridgeway, Sausalito
NIAGARA SUMMIT MINE, Shasta co, underground, Au

PAYNE, THOMAS
Dobbins
PAYNE MINE, Yuba co, Au

PEERLESS DEVELOPMENT CO
235 Bancroft Ave, San Leandro
Pres & gen mgr: H K Melville
PEERLESS MINE near Greenville, underground, Au

PENDLETON, W B
Foresthill
AMERICAN HILL MINE, Last Chance dist, Placer, co, Au

PENN CHEMICAL CO
Campo Seco
Pres: C F Fisk
VP: R L Harp
Gen supt: Harold Hansen
PENN MINE, 1 mi N of Campo Seco, underground, Zn, Cu, Pb, Ag, Au
Geo H Selbird, assy
O G Cruickshank, mine supt
FLOT MILL
Harold Cruickshank, mill supt
50-ton prod daily

PERKINS, I STANLEY
Rt 4, Box 4818, Paradise
NEW ERA MINE, Butte co, placer, Au

PERLITE INDUSTRIES, INC
2332 3rd Ave, Los Angeles 18
Pres & gen mgr: Charles H Harrington
VP: Kenneth B Hysong
Treas & mgr: William E Hysong
VP & mine supt: W R McGowen
Secy & mill supt: Ralph C Harrington
GREY EAGLE MINES #1, 2, & 4 at Tecopa, open-pit, Perlite
B B Bedeynak, assy mine supt & purch agt
Charles Waugh, asst mill supt
John Wheat, mill fore
Walton R Manuel, mech engr
Smith Emery Co, assy
100-TON FURNACE
600-tons prod

PERMIT MINING CORP
Midpines
PERMIT & NUTMEG MINES, Mariposa co, underground, Au

PESTLE MINE
P O Box 84, Randsburg, underground, Au
Owner & operator: B M Mingus
Under dev

PETERSON, NELSON
5250 Bennet Valley Road, Santa Rosa
OSCAR HAGEN CLAIM MINE, Mariposa co, underground, Au

PETERSON, T B
P O Box 186, Randsburg
LUCKY BOY MINE, 2 mi S of Randsburg, underground, Au
Under dev
TUNGSTEN MT GROUP MINE, 8 mi W of Randsburg, underground, W

PHILLIPS MINE
Rt 1, Box 577, Chase Rd, El Cajon
Mgr: Harry J Phillips
UNDERGROUND MINE, Au, Ag, Cu, Pb
1-TON AMAL-GRAVITY MILL
Under dev

PHILLIPS, W
North San Juan
BUCKHORN PLACER MINE, Au, Ag
Under dev

PINNACLE MINING CO
Independence
MOUNT VALLEY MINE, Inyo co, 10 mi NW of Bishop, underground, W
GRAV MILL

PIONEER PROPHYLLITE PRODUCERS
Box 666, Chula Vista
Pres & gen mgr: Dorothy Benner
OPEN PIT MINE in Rancho Santa Fe Mng Dist, Prophyllite
Perrar Matthews, mine & mill supt
Harold Smiley, mine fore
Robert Wilson, mill fore
Elliot Williams, elec
50-TON GRINDING PL

PITTSBURGH PLATE GLASS CO
Bartlett
Mgr: George D Dub
MINE at Bartlett, Inyo co, chemicals
Clark Dudke, asst supt
D M Knowles, ch chem
G E Snyder, mast mech

PLACERVILLE GOLD MINING CO
Box 191, Placerville
Pres: Reginald Owen
Secy-treas: L F S Holland
PACIFIC, OREGON HILL, EPLEY, HARMON, EXCELSIOR, TEXAS HILL & MISSOURI FLAT MINES, Hardrock & placer, Au
GRAV-FLOT MILLS

POLIDORI, PAUL
Del Loma
4-C MINE, Trinity co, placer, Au

POOL, MATTIE M
Joshua Tree
Mine in San Bernardino co, Au

PORTEOUS, HERMAN
Jone
APEX MINE, Calaveras co, underground, Au

PORTER RYAN MINING CORP
Box 395, Lone Pine, Inyo co, Au, Ag, Cu, Pb

PRIOR, LAWRENCE H
W S Rt, Oroville
STAG POINT MINE, Plumas co, placer, Au

PROVIDENCE TUOLUMNE GOLD MINES, LTD
210 Post St, San Francisco
Pres & gen mgr: A Vannini
Secy: R Freeborn
PROVIDENCE MINE, 11½ mi SE of Sonora, underground
150-TON MILL

QUARTZ HILL MINING CO, INC
Scott Bar, Siskiyou co
Pres: L J Cuneo
VP: C Garibotti
Gen mgr: R B McGinnis
Gen supt: J A Vinson
QUARTZ HILL MINE, Scott Bar, open-pit, Au, Ag
Harry B Thompson, mng engr
E E Miller, elec engr
H Bauerstock, assy
500-TON GRAVITY MILL
E M Smith, mill supt
Under dev

QUASEBARTH, A F
Box 172, Winterhaven
AMERICAN GIRL MINE, 5 mi N of Ogilby, underground, open-pit, Au, Ag
CYANIDE-GRAVITY MILL
Under dev, some prod

QUICK, HARRIS HALL
Box 162, Randsburg
MINNESOTA & JOSEPHINE MINES, Kern co, underground, Au, Ag

QUIGLEY KINGS RIVER TUNGSTEN MINES
717 Voorman St, Fresno
Pres: Bill Bazink
Gen mgr: Roy Quigley
Mine at Trimer Springs, via Sander, W
25-TON HOURLY MILL
Ed McMunty, mill supt

RALSTON, R E
Box 103, Johannesburg
PIONEER MINE, San Bernardino co, underground, Au

REASONER, P
Dutch Flat
LIBERTY HILL MINE, Nevada co, placer, Au

RED DOG
Inyo co, c/o W G Osborne, Star Rt, Santa Barbara, Au, Ag, Pb

RED PORPHYRY MINE
Klamath River dist, Siskiyou co, c/o Harold R Tuttle, Hilt

RED WING MINING & MILLING CORP
207 Haberfelt Bldg, Bakersfield
Pres & gen mgr: Fred Risely
VP: C C Scharheuberg
Dir: Charles F Smith
Dir: Rex Roth
YELLOW TREASURE MINE at Ridgecrest, Au, Ag, Cu
Allen W Brooks, engr
Phio A Liebel, mine fore
Ed Eisenhauer, met
Under dev

REED, DONALD
Box 64, Nevada City, (lessee)
MOTT MINE, Alleghany dist, Sierra co, placer, Au

REEL, ROY R
Schilling P O
GRIZZLY BEAR MINE, Shasta co, underground, Au

RELIEF HILL MINE
North Bloomfield dist, Nevada co, placer, Au, Ag
Owner: Western Gold, Inc
c/o A P Landsburg & Jim Swarey, Nevada City

REX MINE
Box 324, Weaverville
REX MINE, Trinity co, placer, Au

REX MINING CO
(A Nev Corp), Box 623, Carson City, Nev
Pres: J C P Scottowe
VIRGINIA & JOSEPHINE MINES at Coulterville
George S Kearney, engr
Under dev

RICHTER, WM & SONS
Rt 2, Box 400, Oroville, Au
3-Dragline dredges
15,000-yds prod monthly

RIEUNCHE, GEORGE
Rt 2, Box 514, Acampo
COOK MINE, Calaveras co, placer, Au

RIGGS, ROBERT A
1237 S Greenwood Ave, Montebello
SAN GABRIEL VALLEY PLACERS MINE, 2 mi W of Azusa, placer, Au, Ag

RINCONADA QUICKSILVER MINE
Santa Margarita, Box 97A
Owner: George R Bell, et al
Open-pit & underground, Hg, Mn
Geo P Bell, mine supt
50-TON FURNACE
Under dev

RIVER PINE MINING CO, LTD
141 Battery St, San Francisco 4
Dredge in Mother Lode dist, El Dorado co, Au, Ag

RIVER ROCK INC
Mgr: B M Dolan, 345 38th St, Oakland
GRAVEL PLANT, Placer, Merced co, Au

RIZZARDINI, A
Box 352, Randsburg
BIG DYKE MINE, Kern co, underground, Au, Ag

RIZZARDINI, A & W C WILKINSON
Box 106, Johannesburg
FLORENCE MINE, Kern co, underground, Au, Ag

ROCK, WALTER
Chinese Camp
MENKE HEGSE MINE, Tuolumne co, placer, Au

ROHDE, JOHN
Quincy
GOLD LODE MINE, 4 mi N of Quincy, underground, Au

ROSE, S N
La Grange
JUMBO MINE, Calaveras co, placer, Au

ROUBLE, LAWRENCE
2167 Marshall Way, Sacramento
STARBUCK MINE, El Dorado co, placer, Au

ROWE, MULLINIX & BUEHLER
1551 Sunset Ave, Pasadena 3
Pres: Wesley N Rowe, 1451 S Delta St, Rosemead
Gen mgr & mine supt: Wm C Buehler, Pasadena
Secy & purch agt: Jeanne Mullinix
REGAL HILL GROUP, Newburg Springs, underground, open-pit, bucket dredge, Au, Ag, Cu, Pb, V
Marie Joan Gabelic, met
10-TON FLOT MILL
Don C Hare, mill supt
Dick Lanier, asst mill supt
CLARENCE FAWCETT QUARTZ CLAIM & UNA-MINTY QUARTZ CLAIM, Ludlow, open-pit, 40-ton bucket dredge, Celestite, strontianite, red ochre, hematite, jasper, flagstone

ROYAL DRIFT MINING CO
Box 75, Magalia
Pres: J W Turner
ROYAL DRIFT MINE, near Magalia, underground, Au
Under dev

ROYAL MINE
Jenny Lind dist, Calaveras co, Au, Ag
c/o Joe J Paltor, Copperopolis
Owner: Frank S Tower

RUSSELL, GEORGE W
Isabella
MAMMOTH MINE, near Isabella, underground
10-STAMP MILL
Under dev

RUTH OPEN PIT MINE
(See Burton Bros)

SALMON RIVER MINES CO
Callahan
Pres & gen mgr: E C Latchen
Purch agt: V W Peterson
TRAIL CREEK MINE, Au
50-TON FLOT MILL
Under dev

SAN GABRIEL VALLEY PLACERS
1237 S Greenwood Ave, Montebello, Au, Ag
Owner & operator: Robert A Riggs
Handling by-products from aggregate pl
500-yds per hour

SANTA ROSA MINING CO
Box 116, Keeler
Pres: J R LeCyr
Lessee: R M Palmer
SANTA ROSA MINE, Inyo co, Au, Ag, Cu, Pb

SARDONYX MINE
Operator: J L Poisle, Johannasberg, Sb

SARGENT, A M
Weldon
DONNIE QUARTZ MINE, Kern co, underground, Au, Ag

SARITA MILLING CO
Box 763, Bridgeport
Pres: Louis W Cramer
Mgr & purch agt: Nay E Tower
CHEMUNG, SARITA & PITTSBURG MINES, underground, open-pit, Au, Ag
100-TON CYANIDE MILL

SAVERCOOL CLAIMS
Greenville
Owner: Kenneth Murray

SCANDIA MINE
5361 Stockton Blvd, Sacramento 17
SCANDIA MINE, Klamath River dist, Siskiyou co, placer, Au, Ag

SCHNELL, H W
c/o Nimshew Stage, Chico
CHANNEL MINE, 5 mi S of Nimshew Butte co, placer (drift), Au, Ag
Under dev

SCHROEDER MINES
Box 169, Mariposa
SCHROEDER MINE, Mariposa co, underground, Au

SCHULTZ, FRANCIS
Greenville
RUSH CREEK MINE, Plumas co, placer, Au

SCHWARTZ & MITCHELL
Rt 2, Box 1783, Roseville
S & M MINE, Lincoln dist, Placer co, placer, Au, Ag

SCOTT, J H CO
Merchants Exch Bldg, San Francisco
WASHINGTON MINE at French Gulch, Au, Ag
75-TON FLOT PL

SEALS, GEO R
Victorville
GREY EAGLE GROUPE & BLUE NUGGET MINES, 22 mi N of Victorville, underground, open-pit, Pb, Ag, Cu
Under dev

SECURITY GOLD MINING CO
Downieville
BIG BOULDER GOLD MINE, below Gold Valley, open-pit, placer, Au
Under dev

SEFERS, FRANK
Box 421, Nevada City
SOUTH YUBA PLACER MINE, Nevada co, Au

SHADOW MOUNTAIN MINES
Nipton
Mine at Shadow Mt Dist, San Bernardino co, Ag, Pb

SHANNON, WILSON & R A PIERSON
Big Pine
CLEVELAND MINE, Inyo co, underground, Au, Ag

SHARP, R B
Bear Valley
LUCKY BOY MINE, Mariposa co, underground, Au

SHERIDAN & BENNETT
Fresno
GARNET DIKE MINE, Fresno co, Kings River, W

SHERMAN PEAK MINING CO
P O Box 583, Kernville, Kern co
SHERMAN PEAK MINE & HILL TOP MINE, Tulare co, 35 mi N of Kernville, underground, open-pit, W
25-TON GRAVITY MILL
Under dev, some prod

SHOEMAKER, O H
Trinity Center, Trinity co, (lessee)
BUCKEYE PLACERS MINE, 2½ mi N of Trinity Center, open-pit, placer
Producing

SHORE, FRANK
Rt 2, Sonora
SHORE MINE, Tuolumne co, underground, Au

SHOREY, D & R L KEMP
Box 13, Greenwood
NEW MACHINE CLAIM MINE, El Dorado co, placer, Au

SHULTS BROS
Box 127, Medford, Ore
PATRICKS CREEK MINE, Patricks Creek, Mg

SHURTLEFF, W
8721 W Olympic Blvd, Los Angeles 25
IBEX MINE, Inyo co, Ag, Pb, Zn

SIERRA TALC & CLAY CO
5509 Randolph St, Los Angeles 22
Mines at Keeler, Tecopa & Shoshone, Inyo co
Mine at Baker, San Bern co, Talc

SIERRA VENTURA MINES, INC
c/o S J Cannata Jr, 1850 W Manchester Ave, Los Angeles 44
SIERRA VENTURA MINE, Inyo co, Ag, Pb, Zn

SIEVERS, P F
Box 24, Clements
MOKELUMNE PIT MINE, San Joaquin co, placer, Au

SISKON MINING CORP
Markleeville
Gen mgr: Hugh Wright
MINE SW of Happy Camp, Au, Cu
LEVIATHAN MINE, Monitor dist, Alpine co, Cu

SMITH, A A & W B
Box 158, Downieville
CHINA SLIDE MINE, Sierra co, placer, Au

SMITH, ERNEST D
P O Box 725, Madera
Mine 16 mi NE of Madera, on Fresno River, placer, Au

SMITH, F A
2853 Chestnut St, San Francisco
MURPHY & COLUMBUS CONSOLIDATED MINES, Coulterville, underground, Au, Ag
Murphy Mine, under dev
Columbus Mine, Idle

SMITH, H D & L D SPELL
Twentynine Palms
ORO MEGA MINE, San Bernardino co, underground, Au, Ag, Pb

SMITH, ROBERT H
Box 110, Johnsville
FOUR BIT MINE, Plumas co, placer, Au

SMITH & RUBENS
Box 85, Folsom or 120 Elm St, N Sacramento
NORTH COLUMBIA MINE, Nevada co, dredge, Au, Ag

SMITH, SIDNEY E
Gen Del, Alleghany
FREIDA HARDIE PROPERTY MINE, Sierra co, placer, Au

SNELLING GOLD DREDGING CO
Snelling
SNELLING DREDGE, Merced co, Au, Ag

SNOW-STORM PLACER
Columbia
Mine in Tuolumne co, placer, Au

SNYDER, VERNE V
Raymond
LEW REGAN PROPERTY MINE, Madera co, placer, Au

SOARES, MANUEL
127 Wall St, Watsonville
CHILI GULCH MINE, Calaveras co, placer, Au

SONOMA QUICK SILVER MINES, INC
58 Sutter St, San Francisco 4
Pres & gen mgr: H D Tudor
VP: E F Halloran
Secy: E R Menary
MINE at Guerneville, Hg
Allen G Mowry, supt
Herbert F Larson, mill supt
150-TON GOULD FURNACE

SONTORO, FRANK
Los Molinos
BURNT RANCH MINE, Trinity co, placer, Au

SOUTHERN CROSS MINE
Box 157, Columbia, Au, Ag
Owners: Grant, Bryan & Foster
Under dev

SOUTHWEST LEAD & ZINC CO
433 S Spring St, Los Angeles
HONOLULU-BIG HORN MINE

SPANISH MINE
(Louis R Moretti, DBA), 14 Lincoln Ave, Mill Valley
Owner: Louis R Moretti
SPANISH MINE, Washington, Nevada co, open-pit, Baryte
D R Schueler, mine supt
Under dev

SPECIMEN MINE
Mother Lode dist, Mariposa co, c/o Joe Costa, Bear Valley, Au, Ag

SPELL, LESLIE D & LYMAN D WEBSTER
Box 207, Twentynine Palms
WEBB MINE, San Bernardino co, underground, Au, Ag, Pb

SPREAD EAGLE GOLD MINE
(See Fisher Research Laboratories)

STANDARD ROCK CO
c/o W J Memie, 1412 E Washington, Stockton
GRAVEL PIT & GOLD PLACER, Memie Ranch, Oakdale dist, Stanislaus co

STEPHENS, A E
Box 175, El Dorado, Calif
INDEPENDENCE MINE, El Dorado co, underground, Au

STEVENS, JACK
Box 68, Grass Valley
MONTE CRISTO MINE, Sierra co, placer, Au

STOCK, HARRY
Sciad Valley
PORTUGUESE MINE, Siskiyou co, placer, Au

STOCKTON HILL MINE
Box 949, Grass Valley
Operator: Ross W Chamberlain, Box 577, Menlo Park
Underground, Au
Grant W Metzger, mine supt
Douglas M Chapman, mine fore
Under dev

STREUBEL, G R
Rt 1, Box 236, Oroville
TOLERATION PLACER MINE, 22 mi N of Oroville, Butte co, underground
Under dev

SUMMIT HILL MINE
Greenwood, Au, Ag, Pb
Owners: George J Boone & B H Turner
25-TON GRAVITY MILL
Under dev

SUNSET CHROME MINE, FOREST HILL
Mine in Placer co, Cr
Operator: C L Matthews

SUNSHINE GOLD MINING CO
Box 555, Redding
Pres: W D McDuffie
SUNSHINE GOLD MINE, underground, Au, Ag
J H Wren, cons engr
J J Sullivan, mine supt
100-TON FLOT MILL
Morgan Evans, mill supt
Under dev

SURCEASE MINING CO
214 30th St, Sacramento
Pres & gen mgr: J W Hoefling
Res mgr: K Malone
Supt: D A Moyer
ATOLIA MINE, Red Mt, 3 mi SE of Randsburg, underground, open-pit, placer, W
Portable Gravity wash pl
Mill & gravity concentration pl

TAPLEY, RALPH W & JO M
Box 356, Columbia
FORD POCKET MINE, Tuolumne co, Au

TAYLOR, MERLYN
Box 202, Mariposa
T A WOOD PROPERTY MINE, Madera co, placer, Au

TERMINAL TRUCK SERVICE
211 N 16th St, Sacramento
CANYON CREEK PLACER MINE, Trinity co, Au

THOMAIN, C F
Sawyers Bar
CROWN MINE, Siskiyou co, placer, Au

THURMAN GOLD DREDGING CO
235 Montgomery St, San Francisco 4
Pres & gen mgr: C H Thurman
Purch agt: I B Walther
PLACER MINE at Box 700, Redding, Au, Ag, Pt
10,000-yd bucket dredge
W J Harvey, supt of operations

THURMAN & WRIGHT
235 Montgomery St, San Francisco 4
Partners: C H Thurman & A J Wright
Purch agt: I B Walther
PLACER MINE at Merced Falls, Au, Ag, Pt
5-yd dragline dredge
J N Sobrero, mine supt

TIGHTNER MINES CO
Room 309, 58 Sutter St, San Francisco
Pres: Robert E McCulloch
RED STAR MINE, Alleghany, underground, Au, Ag
Under dev by Yellow Jacket Cons Gold Mines

TODOC & RED MT CHROME MINES
Platina, Shasta co
Pres & gen mgr: H T Moore
Mines at Platina, open-pit, Cr
Robt C Moore, mine supt

TOTLAND BROS
Box 341, Leevining
Gen mgr: Geo H Totland
BARBARA & BIG NUGGET MINES, Leevining, Au, Ag, Pb
Under dev

TROPICO MINE
(see Burton Bros)

TULARE COUNTY TUNGSTEN MINES
Box 361, Lindsay
BIG JIM MINE, W, concentrate

TUNGSTAR CORP
Rm 711, 6233 Hollywood Blvd, Hollywood 28
Pres: Reginald Owen
Dir: George F Temple
Secy: Chas A Greene
Purch agt: J D Hill
TUNGSTAR MINE, Rt 2, Bishop, underground, W
A P Carper, mine & mill supt
D H Johnston, mech engr
BLACK ROCK MINE, Mono co
GRAVITY-FLOT MILL
75-tons prod

TUNGSTONE MINES
Box 587, Bishop
Pres: W A Trout
VP & gen mgr: C A Rasmussen
Secy-treas: Clyde Triplett
Gen supt & purch agt: Ivar Heifer
MINE & MILL at Posey, W
150-TON GRAVITY CONCENTRATOR

TUOLUMNE GOLD DREDGING CORP
1 Montgomery St, San Francisco
GOLD PLACER at La Grange
300,000-yds monthly dredge
Estey Julian, operating agt

TURNER, JOHN
Moccasin Rt, Chinese Camp
LUCKY #1 & 2 MINES, Tuolumne co, placer, Au

TWINING LABORATORIES, THE
2527 Fresno St, Fresno
Owner & mgr: Fred W Twining
Prod-scale assaying, Flot magnetic separation
Vernon Young, met

UBEHEBE LEAD MINES, INC
356 S Spring St, Room 220, Los Angeles 13, Calif
Pres: Grant Snyder
VP: E S Alexander
Secy: Allen Rankin
Directors: Frank Shepard & Erwin Lampe
Gen supt: Henry Hageman
UBEHEBE MINE, Death Valley, underground, Pb, Zn, Ag, Au
Under dev

UNITED STATES BORAX CO
510 W 6th St, Los Angeles 14
BORAX MINE at Shoshone

UNITED STATES GYPSUM CO
300 W Adams, Chicago 6, Ill
Ch of Bd: S L Avery
VP & treas: C H Shaver
VP: H P Sadler
VP: Edward Rembert
VP: J H Hold
VP: J P Sanger
VP: Otis Wack
VP: E W Carey
Secy & asst treas: A W Irwin
Asst secy: W A Lang
Asst secy: L W Austin
CALIFORNIA OPERATIONS
Two underground & one open-pit Gypsum Mines at Midland
Open-pit Gypsum mine, Plaster City

UNITED STATES LIME PRODUCTS CORP
1840 E 25th St, Los Angeles 58
Pres: W O Anderson
Exec VP: Kennedy Ellsworth
Res mgr: S L Arnot
Purch agt: K B Long
SONORA PLANT, Sonora, Tuolumne co, underground, limestone
W A Stinson, pl supt
Open face dolomite

UNITED STATES VANADIUM CORP
30 E 42nd St, New York 17, N Y
Ch of Bd: W J Priestley
Pres: W E Remmers
VP: J E Horn
VP: O F Holmgren
VP: J H Spillane
TUNGSTEN MINE & MILL, 21 mi NW of Bishop
H L McKinley, supt
A C Sado, office mgr
T W Holmes, mine sup
L E Sausa, mill supt

USHER, J W
Sawyers Bar
SECURITY MINE, Siskiyou co, underground, Au

VALTON MINING & EXPLORATION CO
2320 Lemon Ave, Long Beach
Gen mgr: E P Dorr
SIDEWINDER MINE, NE of Victorville

VAN GIESEN, ED
Box 884, Auburn
GOLDSBERRY MINE, Placer co, underground, Au

VINCENT, A R
c/o Gen Del, Folsom
GEORGE A WILSON PROPERTY, Sacramento co, underground, Au

VIZCAINA & NICHOLS
Big Pine
HOPE GROUP & BLACK CANYON MINE, Inyo co, Ag, Cu, Pb

VOGES, L A
Box 5, Hornbrook
PROVIDENCE MINE, Siskiyou co, underground, Au

VOLO MINING CO
464 Main St, Placerville
Pres: F V Phillips
SHAW & CLAYTON MINES, Mother Lode dist, El Dorado co, Au, Ag

WARNER, CHARLES D & SON, INC
c/o J M Warner, 1027 Yosemite Blvd, Modesto
SAND & GRAVEL PIT & GOLD PLACER MINE, Waterford Dist, Stanislaus co

WARNKEN, LOUIS, JR
Trona
GOLD BOTTOM MINE, Inyo co, Lode (tailings), Ag, Pb

WATERMAN, J L
Rt 2, Box 2024, Elk Grove
MOKELUMNE GRAVEL PIT, San Joaquin co, placer, Au

WATTERS, NORMAN
1199 E 8th St, Chico
SPRING VALLEY RANCH MINE, Butte co, Au

WATTS, ALVIN J
Iowa Hill
STRAWBERRY MINE, Placer co, placer, Au

WAUGHTEL, ROY V
Box 411, Yermo
ALVORD & LITTLE MIKE MINES, San Bernardino co, underground, Au, Ag

WAUKASHAW MINE
c/o F M Mellott, Graniteville Star Rt, Nevada City
Partners: Geo F & F M Mellott
Open-pit & Placer mine, Au, Ag
150-yd prod daily

WAYNE, ANNTOM MINING CO
Kearsarge (via Independence), Inyo co
Ag, Pb

WAYNE, WILLIAM S
Box 2, Fawnskin
GLACIER MINE, San Bernardino co, placer, Au

WEAVER, A C
Sonora
TIP TOP MINE, Tuolumne co, Au

WEAVER, GEORGE
[illegible]estown
[illegible] CADY MINE, Yuba co, placer, Au

WEGMANN, BERT
Box 195, Randsburg
[illegible] DYKE MINE, Kern co, Au, Ag
[illegible] MILL

WELDON, HENRY
[illegible]
[illegible] (Kelso Valley) MINE, Kern co, underground, Au, Ag

WENTWORTH, HOWARD E, OLIVER E MANN & CHAUNCEY J SMITH, JR
[illegible] Canal St, Placerville
[illegible] LOAF MINE, El Dorado, underground, Au

WESTERN ALL-STATE MANGANESE MINING CO
Auburn
[illegible] mgr: E G Lane
PROPERTIES in Butte, Plumas, Trinity counties, Mn
MINE near Auburn, Asbestos
Under dev

WESTERN ANTIMONY, INC
Pres: Wm C Crittendon, 519 Calif St, San Francisco
Sb

WESTERN COPPER CO
Box 178, Taylorsville
Gen mgr: R P Wilson
[illegible] DYKE, BEARDSLEY MINE & Others, Au, Ag, Cu
[illegible]-ton prod daily

WESTERN GOLD, INC
342 Russ Bldg, San Francisco 4
Pres: William H Taylor
Gen mgr: Thomas H Taylor
RELIEF HILL MINE, Nevada co, hydraulic, Au

WESTERN TALC CO
[illegible] E Slauson Ave, Los Angeles 58,
Pres & gen mgr: F H Savell
Secy-treas: J Y Elwood
WESTERN TALC MINE, 9 mi SE of Tecopa, underground, Talc

WHISKEY HILL MINE
Schilling
WHISKEY HILL MINE, Shasta co, underground, Au

WHITE, LUTHENA & FRED RAY
Box 54, Orleans
[illegible]ARCH MINE, Humboldt co, placer, Au

WHITE, WALTER
Rt 1, Box 2972, Colfax
GLENN MINE, Placer co, placer, Au

WIECE, FRANK & WESLYN
Darwin
SILVER SPOON MINE, Inyo co, Ag, Pb, Zn

WILLIAMS BROS
Rt 1, Box 1061-E, Modesto
WILLIAMS BROS MINE, Mariposa co, underground, Au

WILLIAMS, FRED
Rt 1, Box 591C, Fresno
WISHON & WATSON CLAIMS, Friant Dist, Au

WILSON, FRED D
Happy Camp
PROTECTION MINE, Siskiyou co, placer, Au

WILSON, SAM
Crescent City, Chrome

WILSON, W E
Foresthill
PARAGON MINE, Placer co, Au, Ag

WIND WHEEL MINE
Box 151, Columbia
Owner: R O Greeves
Underground, Au, Ag
SMALL GRAVITY MILL

WINTER, WILLIAM & SON
429 San Anselmo
RAINBOW MINE, Siskiyou co, underground, Au

WISER-HUGHES DEVELOPMENT CO
Taylorsville, c/o Ray B Wiser or Alden E Hughes
LUCKY S MINE, 15 mi NE of Taylorsville, underground, Au

WOLDEN, ESTEN
Box 1103, Nevada City
KANAKA CREEK PLACER MINE, Sierra co, Au

WOLGAMOTT, CLAUD M
Box 61, Magalia
Pres: J W Turner
ANCIENT CHANNEL DRIFT MINE, underground, Au, Ag
Claud Wolgamott, mine fore
60-75-TON MILL

WOODRUFF, WILLIAM W
Rt 2, Box 95-A, Perris
CENTENNIAL MINE, Riverside co, underground, Au, Ag

WYLIE, MR & MRS VIRNER L
Georgetown
GOLD COIN MINE, El Dorado co, underground, Au

YACKEL, CARL
Trona
ROCKET MINE, Inyo co, Sb

YELLOW JACKET CONSOLIDATED GOLD MINES
120 Chester Ave, Bakersfield
Pres: Clifford Dicknut
Secy: James Ebert
YELLOW JACKET GROUP, OSCEOLO GROUP, TIGHTNER MINE & TENN GRAVEL MINES at Alleghany, underground, Au, Ag
Chas J Ayres, mine supt

YOLO DEVELOPMENT CO
1900 V St, Sacramento
Pres: E G Bickell
BLUE POINT MINE, Smartville, open-pit, placer, Au
Under dev

YUBA CONSOLIDATED GOLD FIELDS
351 Calif St, San Francisco
Pres: Stanley M Bolster
VP & gen mgr: F C Van Deinse
Secy-treas: O W Smith
PLACER MINES near Marysville, Au
Six dredges directly operated on the Yuba River, Yuba co
Feather River, Butte co, 3 dredges
Scott River, Siskiyou co, 1 dredge
Folsom River, 1 dredge operated under name of Capital Dredging Co
Hoyt C Perring, gen field mgr
Chas V Deaver, res supt

YUKOHL TUNGSTEN MINING CO
Box 39, Dunlap
Pres & gen mgr: R W Burge
TRAWEEK MINE, W
S H Strickland, mgr
35-TON MILL

COLORADO

AJAX MINING & OIL CO
838 Grand Ave, Grand Junction
Pres: Carl Schubert
VP: A D Engle
Secy-treas: Vern B Lee
LUCKY DAY & AJAX MINES, Gateway, open-pit, underground, U
A J Watson, sup engr

ALEXITE ENGINEERING DIVISION OF ALEXANDER FILM CO
Colorado Springs
Pres & gen mgr: J Don Alexander
VP: D M Alexander
ALEXITE MINE, Rosita, open-pit, perlite
Vernon Cheever, mine supt
Frank Pierce, purch agt
R Ebeling, mill supt
Jack Green, engr
Clarion Taylor, met & assy
GRAVITY MILL
100-tons prod daily

ALLIED CHEMICAL & DYE CORP, GENERAL CHEMICAL DIVISION
40 Rector St, New York, N Y
(For officers, see Northeastern listing)
Dir of mng operations: O H Dickson
Gen supt: Wilbert J Trepp, Box 228, Boulder
JAMESTOWN MINES, at Saluda, Box 228, Boulder, underground, Fluorspar
George H Musson, supt
Wm Popst, mine fore
FLOT MILL at Valmont, Box 228, Boulder
A W McGowen, mill fore

AMERICAN SMELTING & REFINING CO
(For Officers, see Eastern listing)
OPERATING OFFICE, COLORADO DEPT
607 First National Bank Bldg, Denver 2, Colorado
Mgr: J Paul Harrison
ARKANSAS VALLEY PL, Box 973, Leadville, Pb
Supt: Leo Hennebach
Asst supt: Thomas Fahey
M D Rood, Harold Muench & Ward Gibson, met
John Clark, mast mech
Edward J Kelly, ch clk
Frank Stevens, safety engr
R L Armbruster, pl engr
R J Elliott, ch assy
Max Kasten, ch chem
300 employees
GLOBE PL, Globeville, Denver, Cd
Supt: Wm L Miles
208 employees

AMERICAN ZINC LEAD & SMELTING CO
Box 558, Ouray
Gen supt: M L Kay
MT KING, KOEHLER MINE, Au, Ag, Cu, Pb, Zn
Wm Klein, mill supt
B W Winn, assy
John Fox, mast mech
200-TON FLOT MILL (CUSTOM)
Under dev

ARIZONA COPPER & ZINC CO
Denver
(Subsidiary of Anaconda Lead & Silver Co, Ryan Bldg, Denver)
Under dev

ANACONDA LEAD & SILVER CO
Ryan Bldg, Denver
Ch of bd & treas: Gen Lloyd D Ross
Pres: Ralph G Orton
Exec VP & compt: Howard P Waite
VP & Pub rel mgr: Clyde McFarland
VP: B K Malla, New York City, N Y
VP: George Jones, Marfa, Texas
VP: Oliver C Custer, Reno, Nevada
VP: Sam A Mock, Denver, Colorado
VP: Norman C Davis, Marfa, Texas
VP: Carl M Dunrud, Meeteetse, Wyoming
Secy: A H Ross
Secy: H L Yaker, El Paso, Texas
Secy: L E Benedict, Denver
Ch geol: Philip Eckman, Toronto, Canada
Ch engr: Clifford R Wilfley, E M
SUBSIDIARIES & BRANCHES
Marfa Mining Co, Marfa, Texas
Las Cruces Marl & Phosphorous Co, Las Cruces, New Mexico
Dona Ana Uranium Mines, Radium Springs, New Mexico
Mina Grands Mines Co, Silver City, New Mexico
Colorado Uranium Mines Co, Denver
Arizona Copper & Zinc Co, Denver
Galena Ridge Mines Co, Meeteetse, Wyo
Shoshone Mng Co, Meeteetse, Wyo
Smuggler Mng Co, Meeteetse, Wyo
Comstock Mng Co, Meeteetse, Wyo
Ross-Waite Oil Co, Texas, Wyoming & Kansas

AYERS, EVERETT
Norwood
Mine in San Miguel co, U

B & B MINES, INC
c/o Richard Downing, 824 Equitable Bldg, Denver 2
WELLINGTON GROUP, McKINLEY MINES, Breckenridge, Au, Ag, Cu, Pb, Zn
Lessee: W L Davenport, Breckenridge

BACHELOR DEVELOPMENT CO
Ouray, Colo
Mgr: J R Sonza
BACHELOR MINE, Ouray co

BAERS & HICKS
Rico
Gen mgr: Geo E Hicks
UNION CARBONATE, underground, Au, Ag, Pb, Zn
Robert Baer, mine supt
Murrey L Baer, asst mine supt
C H Tuller, assy

BARLOW & BEARD
Dove Creek
RADIUM "B MINE, San Miguel co, U

BARNES MINING CO
Box 161, Silverton
Pres & gen mgr: Ray C Barnes
Dir: R M Andreatta
"LITTLE IDA" MINE, Au, Ag, Cu, Pb, Zn
20-tons prod daily

BELISLE & REED
Ophir
NEW DOMINION MINE, San Miguel co

BELL MINING CO
627 3rd Ave, Salt Lake City, Utah
Pres: A J May
VP: A E Perkins
Dir: Geo H Short
Gen mgr, secy-treas: Hugh C Lewis
BELL MINE, 1 mi S of Montezuma, underground, Pb, Zn, Cu, Au, Ag
Under dev

BERYLLIUM MINING CO, INC
920 2nd Ave, Seattle 4, Wash
Pres: J R Wemlinger
VP: A L Schuler
Gen mgr: C A Wemlinger
OHIO CITY MINE, 22 mi NE of Gunnison, open-pit, Beryl, Mica, Feldspar, Tantalite, Columbite
Rosco Riddle, mine fore
Variable prod

BESSIE G MINE
147 E 9th St, Durango
Operators: Bert Thompson & Associates
Mine at Hesperus, Au, Ag

BETTY JANE MINING CO
Montezuma
Mgr: F S Chillson
Owner: J A Alley, 215 S Pine, Newton, Kansas
WAUNEITA MINE, Summit co

BIG FOUR
Kremmling, Zn, Pb, Au, Ag
Owner & gen mgr: Frances McDaniel

BLIXT, HARRY, & J E SHOAK
Ouray, Colo
BEAVER-BELFAST MINE, Ouray co

BONITA MINING & DEVELOPING CO, INC
Box 186, Silverton
Pres & gen mgr: Henry P Ehrlinger
VP: F C Brightly
LEAD CARBONATE MINE, 11 mi NE of Silverton, underground, Pb, Zn, Cu, Au, Ag
FLOT MILL
50-tons prod daily
MINNEHAHA & PRIDE of BONITA, 11 mi NE & NW of Silverton, underground

BREWSTER MINE
Box 2126, Denver
Pres: Frank L Ross
Mgr: Geo Fauri
BREWSTER MINE, Ophir, underground, Au, Ag
Under dev

BROOKS-YOUNG MINING CO
Box 63, Idaho Springs, Colo
Co-owner & mgr: Herbert T Young
ALLEN EMORY MINE, Summit co

BUCKSKIN JOE MINES, LTD
Alma
Gen mgr & operating partner: Charles W Jordan
PHILLIPS MINE, Alma, Au, Ag, Cu, Pb, Zn, Fe
Joe Thibodeau, mine fore
200-tons prod monthly

CALLAHAN ZINC-LEAD CO, INC
100 Park Ave, New York 17, N Y
Pres: Joseph T Hall
VP: Julian B Beaty
VP: Harold J Hull
Secy: Alfred Ogden
Treas: E A Salo
VP in chg operations: R F Mahoney
AKRON MINE, Sargents, Pb, Zn
K K Hood, mgr
James E Dunn, supt
R James Flynn, asst supt & acct
Arthur Emerson, mine fore
John Botelho, engr
75-TON FLOT MILL

CAMP BIRD LTD
49 Moorgate, London E C 2, England & 70 Pine St, N Y
Pres: F C Heley
Dir: K S Parker
Dir: E C Leaman
Dir R H A Neuschild
CAMP BIRD MINE, Ouray, Au, Ag, Cu, Pb, Zn
Keith Johnston, mine supt
U S Management by Goldfields American Dev Co, Ltd
Under lease to King Lease, Inc
150-ton prod

CANYON GOLD, INC
Cripple Creek
Pres: Troy E Wade
VP: William A Kyner
Gen mgr: Jesse Simmons
GRACE GREENWOOD MINE, underground, Au
Under dev

CENTRAL MINING & DEV CORP
Central City
Pres: W C Schaus
VP & mgr: R M Schaus
Purch agt: John M Haney
Office mgr: Bette A Schaus
NATIONAL, MEEKER SUCCESS, IVANHOE & BARNES STARK COUNTY MINES, ETC, Central City, underground, Au, Ag, Cu, Pb, Zn
Joe Thomas, mine supt
Gilbert McGrath, mill supt
Harry Pierce, smelter supt
Marvin Olson, mine fore
William Goebel, mill fore
Dr O D Knight, met & assy
Under dev

CHAMPION MINES CO
941 Monroe St, Denver 6
Pres: Jesse Simmons
Secy: J J Simmons
Owns MORNING STAR & LAST CHANCE MINES
Leases JERRY JOHNSON, WPH & FOREST QUEEN MINES, Cripple Creek, underground, Au
F W Gunn, mine fore
Under dev

CLARK, DALE,
Egnar
DEPRESSION CLAIM, Egnar area, U
Lessor, USV
DOROTHY MAY MINE, San Miguel co, U

CLARK DEVELOPMENT CO
Kokomo
Development of Sedalia & Fortune Claims on split-check
Paul Clark, mgr
Harold Glina, supt
Pb, Zn

CLIMAX MOLYBDENUM CO
500 5th Ave, New York City, N Y
Pres: Arthur H Bunker
VP chg of mine: W J Coulter
Gen supt: C J Abrams
Asst gen supt: Franklin Coolbaugh
Purch agt: A Stazicker
Mine at Climax, Mo, W, Sn, Topaz
Wm McGlothlin, mine supt
W Walmsley, asst mine supt
M Desseau, mill supt
John Petty, mine fore
M S Walker, engr
F S McNicholas, con engr
F Roberts, mech engr
A L Bement, elec engr
R E Cuthbertson, met
Richard Ronzio, assy
Chester Burn, electrician
17,000-TON GRAVITY-FLOT MILL

CLIMAX URANIUM CO
Grand Junction
Pres: Arthur H Bunker, New York, N Y
VP: E J Duggan
Gen mgr: Blair Burwell
Asst treas: J D Jallings
Purch agt: Ray Gough
Underground, U, V
Ernest B Blair, mine fore
J E Weston, mine supt
Sam K Smyth, geol
R S White, mine engr
M N Shaw, mill supt

COBB, HARRISON S
401 Pine St, Boulder
FRANKLIN MINE, 10 mi W of Boulder, underground, Au
C R Jones, mine fore

COLONEL SELLERS
Operator: W Walter Byron, Kokomo
Au, Ag, Cu, Pb, Zn

COLORADO FUEL & IRON CORP
Continental Oil Bldg, Denver
Pres: C W Meyers
Exec VP: A F Franz
VP chg of operations: J J Martin
Dir of purch: L C Rose
WAGON WHEEL GAP MINE, Wagon Wheel Gap, Fluorspar
J E Whitney, supt
G H Nupp, mgr of mng dept
R L Hair, gen supt of Fuel Mines
W J Schenler, chief mng engr
Idle

COLORADO GOLD KING, INC
Box 186, Silverton
Mine & Operating Office, 231 S LaSalle St, Chicago, Ill; corporate office
Pres: J C Orton
Gen mgr: Henry F Ehrlinger
Dir: Chas A Thomas
Purch agt: Wm Gorman
GOLD KING & GOLDEN MONARCH MINES, Box 186, Silverton, underground, Au, Ag, Cu, Pb, Zn
Lyndon M Mertz, mine supt
Chas W Fleming, asst mine supt
Geo Vuilleque, mill supt
Henry F Ehrlinger III, asst mill supt
John Bridge, engr
John Jenkins, mine fore
Knut Svendenborg, mill fore
James W Cole, assy
50-TON FLOT MILL

COLORADO URANIUM MINES CO
Denver
(Subsidiary of Anaconda Lead & Silver Co, Ryan Bldg, Denver)
Under dev

COLUMBINE PLACER MINES, INC
Room 410, 1108 15th St, Denver 2
Pres: Samuel Johnson
Secy: Dwight F Johnson
RED ROCK MINE near Tin Cup, Au, Ag
Wilfley & Driback, assy
Small gravity Mill
Under dev

CONSOLIDATED CARIBOU SILVER MINES INC
1406 Pearl St, Boulder
Pres: Donald M Nelson
VP: Richard J Reynolds, Jr
Dir: Joseph B Keenan
Gen mgr: Matthew Olsen
Purch agt: L W Ellin
Underground Mine, 20 mi W of Boulder, Ag, Pb, Au, U
Elmer Hetzer, mine supt
Paul Robinson, mill supt
Clyde B Boyle, engr
Tom Riley & Frank Mitchel, shiftbosses
Edward Hill, assy
150-TON FLOT MILL

CONS, FELDSPAR CORP
Parkdale
Home Office, Trenton, New Jersey
Pres: R W Lawson Sr, Trenton, N J
Gen mgr: Edward Boone, Kona, N C
Treas: M J McHugh, Trenton, N J
Purch agt: Paul Willis, Kona, N C
Mine at Parkdale, Feldspar
A E Boone, mine & mill supt
Noel Quick, G A Ohlson, C Clift, mill fore
E Knap, met
C B Harris, chemist
Howard Mize, electrician
600-TON FLOT MILL
500-tons prod daily

CORDILLERA CORP
Box 61, Fairplay
VP in chg oper: N Harry Dunn
Owner: Carl J Merline, 2130 6th Ave W, Seattle, Wash
LING GROUP MINES, Summit & Park counties

COSTELLO LEASE
Villa Grove, Bonanza Rt
Operator: W J Costello
SANKEY MINE, Ag, Cu, Pb, Zn
50-tons prod monthly

CRESSON CONSOLIDATED GOLD MINING & MILLING CO
Box 127, Cripple Creek
Pres: Merrill E Shoup
Gen mgr: Max W Bowen
Asst gen mgr: Harold S Worcester
Gen supt: Charles H Carlton
CRESSON MINE, underground, Au
Wesley Moulton, mine supt
Guy Norabaugh, mech engr

CRIPPLE CREEK MINING & MILLING CO
Box 247, Cripple Creek
Gen mgr: Arthur J Hogan
GOLD KING MINE, 1e mi E of Cripple Creek, underground, Au

DANIEL, GEORGE S
616 F St, Salida
STONEWALL MINE, Chaffee co

DEVILS HOLE MINE
Route 1, Box 556, Canyon City
Owner & operator: E E Zingheim
Mica, Feldspar, Be, Tantalite

E & H LEASING CO
Meeker
BURRELL #1 & LAST DAY MINES, Montrose co, U

EAST RIDGE CO
633 S Shatto Pl, Los Angeles 5, Calif
Pres: Carlton E Byrne
VP: Fred Moldenhauer
ANDRUS MINE, 14 mi NW of Silverton, underground, Zn, Pb, Cu, Ag, Au
Francis H Frederick, geol
Arthur E Dirrim, mine supt

EDWARDS & ASSOCIATES
117 Osage Ave, Manitou Springs
Pres & gen mgr: Edward A Edwards
AZTEC GROUP MINE, under lease & bond from George E Hicks, owner, Rico, Dolores co
underground, Ag, Pb, Zn
C H Tuller, assy
Harry Barnes, mine supt

EMPERIUS MINING CO
Gen offices, mines & mlg pl, Emperius Bldg, Creede, Au, Ag, Pb, Cu, Zn
Pres: T B Foxson
Treas: C A Davlin
Gen mgr: E W Nelson
Asst gen mgr & mill supt: T T Biddle
W I Leary, ore purch
I D Crawford, mine supt
Denver Office, 700 Washington St, Denver
Ch of bd: B T Foxson
150-TON FLOT MILL

ERNEST, LLOYD & HAROLD
Dove Creek
RADIUM #6 MINE, San Miguel co, U

FEDERAL MINING & MILLING CO
Russell Gulch, Gilpin co, underground, Au, Ag, Cu, Pb, U
Pres & gen mgr: J N Thouvenall
Henry Rees, mill supt
John Thomas Powers Jr, mill fore
Royal R Hinckley, met
Frank Heeran, electrician
75-TON FLOT MILL
Under dev

FISHER MINING CO
Dillon
Pres: A Harold Fisher
Gen mgr: A L Fisher
THE GOLDEN SLIPPER MINE, Dillon, underground, Au, Ag, Cu, Pb
Frank Baker, mine supt
Under dev

FLORADO MINING CO
700 U S National Bank Bldg, Denver 2
Pres: F R Wolfle
Secy-treas: E H Wolfle
Dir: G W Davender
Mine at Montezuma, Au, Ag, Pb, Zn
Earl Sullivan, mill supt
100-TON FLOT MILL
50-ton prod

FOREST & WEDGE MINE
Rico, Au, Ag, Cu, Pb, Zn
Owner: George E Hicks
Operator: Baers & Hicks
C Fuller, assy
50-tons prod daily

FOSTER, RALPH
1217 Colorado Ave, Grand Junction
CALAMITY MINES #13-18, Calamity area, U
Lessee: USV

FOURSOME MINING CO
Silverton
Gen mgr: Wm Erickson
COLUMBUS MINE, Au, Ag, Cu, Pb, Zn
Operators: Wm Erickson & Associates

FRANKLIN MINING CO
216 U S National Bank Bldg, Denver
Pres & gen mgr: P J Garbarino
Secy-treas: A W Shoepf
Purch agt: P J Garbarino
FRANKLIN 73 MINE, Idaho Springs, Au, Ag, Cu, Pb, Zn, Fe
F C Rice, mine supt
A W Schoepf, elect engr
D V Watrous, met cons
Charles O Parker, assy
25-50 tons prod

FRONT RANGE MINES, INC
Continental Oil Bldg, Denver
Pres: John Deerksen
VP & gen mgr: George H Teal
MATTIE MINE, Clear Creek co
MELVINA MINE, Boulder co
STRONG MINE, Teller co

GALENA QUEEN LEASING CO
c/o Glen Gardner, Silverton
GALENA QUEEN MINE, San Juan co

GARFIELD MINE
Box 209, Salida
Part owner & lessees: S E & W E Burleson
Gen mgr: W E Burleson
Contractor: Carl McMullen
GARFIELD MINE, 20 mi W of Salida, underground, Pb, Au, Ag
2-tons prod daily

GARIBALDI LEASE
Box 592, Leadville
Partners: Robert L Jones & Harry O Nylene
GARIBALDI TUNNEL, Au, Ag, Pb, Zn

GATEWAY MINING & DEVELOPING CO
Route 4, Grand Junction
Pres: Herman Tetzloff
VP: Delbert Kaus
Dir: Rudolph Hartman
Gen mgr: T H Skidmore
GATEWAY MINE, 61 mi S of Grand Junction, underground, open-pit, U, V
Under dev

GENERAL AGRICULTURAL PRODUCTS CO
420 High St, Denver
Pres: James McDowell
Secy-treas: D J Varley
Gen mgr: Ben E Warren
GAPCO MINE, Payne Siding near Austin, open-pit, Sulpher, Base soil conditioner

GENERAL GOLD CORP
Natoma
Pres: W H Haines, 2020 8th Ave, Sacramento, Calif
Gen mgr: A E Hall, Leadville
Secy-treas: O J Boucher
MT ELBERT PLACERS, Leadville, Au, Ag
2 dragline dredges
6,000 yds daily

GENESSE TUNNEL VENTURE
Ouray
GENNESSE TUNNEL MINE, 16 mi S of Ouray, underground
200-tons prod monthly

GILES, LEROY & CO
Idaho Springs
Secy-treas: LeRoy Giles
DIXIE MINE, Clear Creek co

GLOBE HILL MINING CO
334 Independence Bldg, Colorado Springs
Pres & gen mgr: A S Konselman
VP: Melvin Brogger
Secy-treas: George F Grote
PROFER & CHICAGO TUNNEL MINES, 6 mi E of Cripple Creek, underground
Under dev

GLOBE MINING CO
1681 Humboldt St, Denver
VP & dir: Bertina Schnetze
Secy & dir: Jerry Coffindaffer
Treas & dir: Theodore E Spencer
Dir: Howard N Coffindaffer
Dir: Richard Cooper
KLONDIKE MINE at Blackhawk, Au, Ag, Cu, Pb, Zn, Fe
H N Coffindaffer, mine supt

GOLD MINES CONSOLIDATED, INC
Georgetown
Pres & gen mgr: K M Ohlander
Treas: J R Havill
Secy: Fred E Pauls
DONDERBERG-TERRIBLE MINE, Silver Plume
JOE DANDY MINE, Cripple Creek, Au
Under dev

GOLDEN CYCLE CORPORATION
Box 98, Carlton Bldg, Colorado Springs
Pres: Merrill E Shoup
VP & gen mgr: A H Bebee
VP & mgr mill dept: Max Bowen
Purch agt: John Esch
AJAX MINE, Cripple Creek, underground, Au
Charles Carlton, mine supt
Marvin P Dycus, mill supt
1,400-ton roast amalgamation & cyanide custom gold mill

GREAT EASTERN MINING CO
Silverton
Pres: William L Chase
Dir: Allen T Chase
Purch agt: Carl Larson
GREAT EASTERN, SIOUX CITY & PRIDE of the WEST MINES, underground, Au, Ag, Cu, Pb, Zn
Wm Hunt, mine fore
Harold White, mine supt
C W Fleming, E M, asst mine supt
John Knapp, E M, mill supt
Wm Gohrman, asst mill supt
Robert H Sayre Jr, E M, engr
Jack Kessler, mech engr
William L Chase, geol engr
Lester Stewart, assy
Paul Hoffman, electrician
100-TON FLOT MILL

GREGORY, C W
749 B St, Salida, Colo
Owner: Mrs Harvey Gillette
CORA MINE, Saguache co

GREGORY & PACKARD PLACER
Blackhawk
Owner: L D Clark
Mine in Gilpin co, Southern Mag

HENNA MINES, INC
Box 483, Boulder
Pres: Leo Delorme
Secy & gen mgr: William E Brew
VP: Fred S Lewis
CASH GROUP, BELLEVUE, WHO DO & MINES, Hazle A, 10 mi NW of Boulder, underground, Au, Ag, Pb
F L Brown, mine shiftboss

HENNING, KETTLE & WALKER
Westcliffe
DEFENDER MINE at Westcliffe, Au, Ag, Pb, Zn
Lessee: Ed Stacy, Silver Cliff

HETZER MINES, INC
Boulder
Pres: Elmer Hetzer
MINES in Boulder co, W, worked as follows
HOOSIER MINE, George Prime & Johnson
PROSPECT TUNNEL & part of GOLD MINE, C R Jones & E P Funk
SPENCER TUNNEL, Ray & Russell
LAST CHANCE MINE, George Prime, Johnson, & Woody McKenzie
HEINE LEASE, T J Hennings & J M

HIGHLAND MARY MINES, INC
900 Land Bank Bldg, Kansas City,
Pres: Albert R Jones
Secy-treas: C W Tripp
Mgr: Fred A Brinker
Gen supt: R M Andreatta
Mine & mill 9 mi E of Silverton, Au, Cu
Wm Loftus, mine fore
150-TON FLOT MILL

HOLDEMAN, E S
Uravan
MILL #1 R A M A RAMBLER of the CLIMAX
2 mi S of Uravan, underground,

IDARADO MINING CO
14 Wall St, New York City, N Y
(see Newmont Mng Corp, Calif)
Pres: Oscar H Johnson
Gen mgr: Fred Wise
Mines located on Red Mountain, 11 mi S Ouray, Box D, Ouray, Cu, Pb, Zn
R W Leber, mine fore
R W Unger, mill supt
J S Wise, ch engr
K N Tucker, asst mech & ch electrician
500-TON FLOT MILL

JACK POT LODES # 1-2-3
Ouray, Au, Ag, Cu, Pb, Zn
Owner & operator: P O Richardson
Under dev

JEFFREY & ULIBARRI
Montezuma
QUAIL, WATERLOO, NEW YORK & SILVER KING MINES, Summit co

JIM MINE
2551 Alton, Denver
Operators: John Alderman & Associates
Mine at Browns Canon, Fluorspar

JOE DANDY MINING CO
334 Independence Bldg, Colorado Springs
Pres: Hildreth Frost
VP: Vernon Mitchell
Gen mgr & treas: A S Konselman
Secy: C E Yoes
JOE DANDY, C O D, COMMONWEALTH,
CLIMAX, VICTORY & SEATTLE MINES, located 3-5 mi E of Cripple Creek, underground, open-pit, Au Ore

JOSIE K FOLSOM MINING & MILLING CO
4280A Holly Ave, St Louis 15, Mo
VP: Lulu L Nelson
Gen mgr: Fred W Kublin
Dir: Paul Becker
Dir: Oscar F Huegel
JOSIE K FOLSOM MINE, Saguache co,
Address, Del Norte, Au, Ag
George G Hayes, Denver, Assy
Under dev

KENNEBEC MINING CO
704 U S National Bank Bldg, Denver
(Lessee) M J Krolicki
Gen mgr: A E Moynahan
Supt: R L Robeson
ORPHAN BOY, Park co

KINGS TURQUOISE CO
Manassa
Pres: Charles G King
Mgr & mine fore: Horace E King
TURQUOISE MINE at Manassa

KNAPP, K E
Silverton, (Owner & operator)
CALEDONIAN MINE, underground, Au, Ag, Pb, Zn
Partners: Williams & Knapp
K E Knapp, M E, mine engr
BURROWS MINE, Ag, Pb, Zn

KRONSBEIN, ROBERT F
Norwood
Mine in San Miguel co, U

JOHN LAMBERTSON
Gunnison
Owner & mine engr: Karl Lambertson
STAR MINE GROUP, 55 mi N of Gunnison, underground, Pb, Ag
300 tons Crude Ore prod yearly
DOCTOR MINE, 27 mi N of Gunnison, underground, Zn
Idle

LEADVILLE LEAD CORP
306 Kittredge Bldg, Denver
Treas: Tom E McKay
Secy: Clio L Kem
LAST CHANCE MINE, Park co

LEHR & DEARDORF
Rifle
CALAMITY #26 CLAIM, Calamity area, U
Lessor USV

LITTLE ALICE LEASE
Leadville
LITTLE ALICE MINE, Lake co

LITTLE JENNY #1-2-3
Villagrove, Au, Ag, Cu, Pb, Zn
Owners: Dr Foster Myers, Jesse Myers & Gertrude Baldwin, 250 Loma Drive, Los Angeles, Calif
Lessee: L G Johnston, Villagrove

LOMBARD MINES, INC
Idaho Springs
Pres, gen mgr & purch agt: Oscar L Stutenroth
VP: M A Isern
Dir: C W Montgomery
LOMBARD MINE, 11 mi NW of Idaho Springs, underground, Au, Pb, Ag, Cu, Zn
100-TON FLOT MILL
Idle

LONDON EXTENSION MINING CO, THE
704 U S National Bank Bldg, Denver 2
Pres: Fred C Bishop
Gen mgr: Harry C Bishop
Dir: R W Fraser
Dir: H C Bishop Jr
Dir: A E Moynahan
Dir: R B Warmbrodt
GOLDACRES MINE at Beowawe, Nev, open-pit, Au, Ag, in prod
CYANIDE MILL
12,000-tons prod monthly
R B Warmbrodt, mine supt
H C Bishop Jr, mill supt
A E Moynahan, gen cons engr
Charles S Stewart, mill fore
LONDON BUTTE MINE on Penn Mt, near Alma, Colo being dev jointly with London Mines & Mtg Co, of Colorado Springs, under project name-Penn Project Association

LOST DAY MINE
Partners: Earl A Alexander & Ben H Simpson, Ouray, Au, Ag, Cu, Pb, Zn

LU EV MINING CO
Idaho Springs
Partner: J Gilbert McGrath, Idaho Springs
Partner: Joe Thomas, Central City
HOPE, POWERS & IROQUOIS MINES, Willis Gulch, Gilpin co, Au, Ag, Cu
FLOT MILL

LUPTON MINING CO
Box 498, Georgetown
Pres: Ellis P Lupton
Gen mgr: John C Lupton
Secy & purch agt: W E Vernon
Mgr: C E Fetterhoff
GRIZZLY GROUP, BAKERSVILLE & MOLINE SILVER MINES at Silver Plume & GEORGETOWN CHIEF & BOSTON GROUP MINES, Au, Ag, Cu, Pb, Zn
Axel W Johnson, mill supt
Karl C Eisner, mine fore
50-TON FLOT MILL

M & S, INC
838 W Maple St, Denver
Pres: J W Magnuson
Gen mgr: Ralph H Magnuson
Dir: V E Magnuson
Dir: C A G Magnuson
BUCKEBUCK MINE, Fremont co & SNOWDRIFT MINE in Douglas co, open-pit, feldspar
Philip Piccone, mine fore
Archie Piccone, mine fore
John Falgien, mine fore

MAMMOTH MINING & DEVELOPMENT
Box 525, Grand Junction
MAMMOTH CLAIM, FOUNTAIN of YOUTH MINE, Mesa co, U

MARY MURPHY GOLD MINING CO
Box 209, Salida
Lessees: S E & W E Burleson
Gen mgr: W E Burleson
MARY MURPHY MINE, 4 mi SW of St Elmo, Underground
Henry Carey, mine fore
Under dev

MAY DAY MINING CO
Box 561, Silverton, Colo
Mgr: Ennis Cole
MAY DAY MINE, San Juan co

McCRISTY, JOHN & ELMER SWERDFEGER
Boulder
SPHIR MINE, underground, W
Leased from Vanadium Corp of America
Under dev

MIDNIGHT MINING CO
Aspen, underground, Ag, Pb, Zn
Pres & gen mgr: Frank J Willoughby
Mgr: Fred T Willoughby
Carl Johnson, mill supt
T H Sandstrom, mine supt
Edwin C Holmes, mine fore
Partial capacity prod

MINE EQUIPMENT CO
Box 2506, Boise, Idaho
Owner: Cole Godsey
JENSEN TUNNEL & WIDOW WOMAN MINES, underground, placer, Au, Ag, Pb, Zn
GRAVITY-FLOT MILL & BUCKET DREDGE
Under dev

MINERALS ENGINEERING CO
801 4th Ave, Grand Junction
Pres: Blair Burwell
VP & gen mgr: R G Sullivan
Secy: A F Boyd
Treas: W G Haldane
Mgrs of King Lease, Inc, Ouray
Contractors for diamond drilling

MOHAWK MINES
c/o Walter Enyeart, mgr, Box 154, Breckenridge
Operators: Walter Enyeart, Lester Thompson & I A Taylor
MOHAWK & RADICAL MINES, Summit co

MONO DIAMOND JOE MINES
c/o Arthur Furtenier, mgr, Idaho Springs
MONO DIAMOND JOE MINE, Clear Creek co

MONTANA MINING & DEVELOPMENT CO
Idaho Springs
Pres: Maynard Clinton
Mgr: James Anderson
LAMARTINE MINE, Clear Creek co

MORNINGSIDE DEVELOPMENT CO, INC
Box 84, Ouray
Pres & gen mgr: Ben H Simpson
VP: Roy Turner
LOST DAY & PATSY MINES, 11 mi S of Ouray, underground, open-pit, Ag, Pb
Ben H Simpson, mine supt
50-tons prod daily

MORNING STAR MINE
(See Champion Mines Co)

MORRILL, J W
Uravan
HENRY CLAY #2, Montrose co, U

NABOB DEVELOPMENT CO
814 Majestic Bldg, Denver
Pres: C R Froman
VP: Geo F Crites
Treas: C L Morron
Gen mgr: Pearl Hubbard
NABOB MINE, 3 mi S of Lawson, underground, Ag, Pb, Au, Cu
Charles Parker, met & assy
George W Crites, mine supt
Under dev, some prod

NEESHAM & KARC
Nucla
Gen mgr: Glenn D Neesham
SPHINX MINE, 12 mi S of Uravan, underground, U
Robert Ebbs, mine fore

NEVADA MINES CO
Box 1102, Bonanza
Pres: Walter Timney
Gen mgr: J G O'Brien
CORA MINE, Au, Ag, Cu, Pb, Zn
Smelter
Curtis Quinn, mine fore
E E Smith, assy

NEW JERSEY ZINC CO
160 Front St, New York 7, N Y
Pres: Henry Hardenbergh
Gen mgr of mines: J S Goodwin
Gen purch agt: W J Lee
EMPIRE ZINC DIVISION, Gilman
EAGLE MINE, underground, Pb, Zn
F J Maloit, gen supt
W L Jude, supt
W J Lee, purch agt
600-TON FLOT MILL
452 employees

NEW MONARCH LEASE
Box 939, Leadville
Partner: Charles A Hopkins, mgr
Partner: Fred H Rice
Partner: Carl Youngstrom
NEW MONARCH GROUP, Stampton, underground, Au, Ag, Cu, Pb, Zn
Operated under Split-check Lease with C N Scott
25-TON GRAVITY PILOT-PL
300-tons prod monthly
Under dev & producing

OLD HUNDRED GOLD MINING CO
Box 448, Silverton
Pres: Charles N Kimball
VP: Paul W Neuenschwander
Director: W G Roeder
Gen mgr: B F Webster Jr
GARY OWEN MINE, 6 mi NE of Silverton, in the Animas Mng Dist, San Juan co, underground, Pb, Zn, Ag
Paul Hoffman, elect engr
B F Webster Jr, mine engr
L B Steward, assy
Thomas Burgess, mine fore
FLOT MILL Under dev
OLD HUNDRED GROUP, 8 mi NE of Silverton, in the Animas Mng Dist, San Juan co
Idle

OSCEOLA MINING & MILLING CORP
Silverton, Colo
Pres: Lincoln C Shirk
VP: William G Gianetto
VP & supr of mill: C Leslie Larson
Secy: A B Crosby
NEW GARFIELD MOUNTAIN MINE & LACKAWANA MILL, San Juan co

OZARK-MAHONING COMPANY
Box 449, Tulsa 1, Okla
Pres: Park Kelley
Purch agt: J L Cadden
FLUORSPAR MINES & CONCENTRATING PL, Jamestown
E G Ovitz, pl supt

P W LEASERS
Box 178, Empire
Mgr: Charles B Myers
GOLD KISSURE GROUP, Clear Creek co

PARK CITY CONSOLIDATED MINES CO
810 Kearns Bldg, Salt Lake City, Utah
Pres: Carl V Stenle
VP: Richard C Badger
Secy: J A Howell
Gen mgr: Nolan Probst, Gunnison
KEYSTONE MINE, Crested Butte, 29 mi N of Gunnison, underground, Zn, Pb, Cu, Ag
Under dev

PURPLE-TOP MINING CO
Glenwood Springs
Pres, gen mgr, purch agt & gen supt: K A Baillie
VP: Les Baillie
Other officer: Della Chestnut
HUMMER #1 (see Baillie-Turnipseed lease) 15 mi NE of Leadville, underground, Pb, Ag, Zn
Geo Garry, geol
Les Baillie, asst mine supt
40-50 tons yearly output
1 Car prod
Under dev
PURPLE TOP MNG CO, 14 mi NE of Leadville, underground, Pb, Ag, Zn
Colo assy Co, assy
Leslie Baillie, mine supt
K A Baillie, asst mine supt
Under dev, Idle

QUARTZ HILL MINERALS DEV CO
Russell Gulch, Gilpin co
Pres: J N Thouvehell
VP: Sole Owner
ELDORADO GROUPE, near Russell Gulch, underground, Au, Pb, Cu, Ag
Under dev

RAWLEY MINE
Villa Grove, Bonanza Rt, Ag, Pb, Zn
Lessee: W J Costello

REALTY COMPANY, THE
Box 155, Central City
Pres: Robert E Harvey, Denver
VP: Ray A Bennett, Denver
Secy-treas: Chandler Weaver
CALHOUN GROUP, WOODS & OTHER MINES, Central City, Leavanworth Gulch, Gilpin co, Au, Ag, Cu, U
Lowell A Griffith, mgr & mine supt
Under dev

RESURRECTION MINING CO
Leadville
(See Newmont Mng Corp, Calif)
Pres: Fred Searls Jr
Gen mgr: M E Newlove
Asst mgr: B H Greenlee
Chief clk: F R Hochatey
Clks: Mary Hamich, Jean Mastripolito & Emma Jean Paustian
Timekeeper: P A Schneider
Underground Mine, Au, Ag, Pb, Zn
Elzie Ray, fore
C N Stout, asst fore
Roy Bond Sr, mine fore
Wilson Michell, geol
Norman Schroeder, ch elect
A G Gunelson, ch engr
Robert E Kendall, engr
H S Whitcomb, engr
W R Doyle, mech engr
E A Tyler, saftey engr
G P Ducotey, mast mech
John Poderzay, Tak fore
B F Carey, mine shiftboss
Herman Ganzer, mine shiftboss
G I Hougland, mine shiftboss
Carl Lindbloom, mine shiftboss
W E Wilson, mine shiftboss
R C Youtz, mine shiftboss
W J Finnegan, mine sampler
W B Meldrum, mill fore
Adolph Kuss Sr, asst mill fore
E L Tatman, mill supt
Joe Jakopic, carpenter fore
Glenn Peterson, warehouseman
James Saunders, ch assy
Frank Finch, assy
A M Bosworth, assy
Donald Halsett, assy
C C Motter, met
August L Malenek, mill shiftboss
Norman Blakey, mill shiftboss
Lewis Cramer, mill shiftboss
Rudolph Fabian, mill shiftboss
Charles Halsett, extra shiftboss
Francis Slavin, mill clk
400-ton prod
275 employees

RICO ARGENTINE MINING CO
Rico
Pres & gen mgr: S B Hinckley
ARGENTINE, VAN WINKLE, SILVER SWAN & MT SPRINGS MINES near Rico, underground, Pb, Zn, Ag, Cu, Au, Pt
Carl W Gustafson, mine supt
Chas W Dahlberg, mill supt
C H Tuller, assy
FLOT MILL
Under dev

RINDERLE, A C
Grand Junction
INCLINE MINE #252, Mesa co, U

ROBERTS & CO
Leadville
Partners: John Roberts, John Vosberg, John Wickland & H S Shimmin
DOLLY B LEASE, Lake co
150-tons prod monthly

ROBUSH, JOHN & CO
Cripple Creek
Operators: John & Earl Robush
EL PASO MINE, Teller co

RODGERS, J H & E J CROOK
Nederland
TENNESSEE MINE, S of Nederland, underground, W
Under dev

RUTH COMPANY
Continental Oil Bldg, Denver
Gen mgr: Joseph P Ruth
RUTH CUSTOM MILL, IDAHO SPRINGS & SILVER AGE MINES, Ag, Au, Pb, Zn
50-TON FLOT MILL
Under dev

ST LOUIS LEASE PARTNERSHIP
c/o Joseph Kerzon, Leadville
ST LOUIS MINE, Lake co

SAGE & BENNETT
Ucla
DOLORES CLAIM, Uravan area, U
Lessor: USV

SAN JUAN MINES CO
Silverton
SILVER LEDGE MINE, San Juan co

SHENANDOAH-DIVES MINING CO
616 Finance Bldg, Kansas City, Mo
Pres: James W Oldham
Exec VP: Charles A Chase
Purch agt: Edwin A Larson
Mine at Silverton, Au, Ag, Cu, Pb, Zn
John Holmgren, mine supt
Aldo Bonavida, mill supt
Charles H Turner, engr
M N Sarles, mech engr
Hammond Mathews, elec engr
Joe Arietta, tram supt
James Cole, assy
Harry Trontel, assy
Howard Hill, electrician
750-TON GRAVITY-FLOT MILL
17,000-tons prod monthly

SILVER BELL MINES CO
U S Natl Bank Bldg, Denver 2, Colo
Pres & gen mgr: E H Sanders
Gen supt: A A Smith
SILVER BELL MINE, Ophir, Au, Ag, Cu, Pb, Zn
150-TON FLOT MILL
Clifford N Wilfley, engr

SILVER SHIELD MINING CO
Ouray
Pres: Mrs Urpo Kyto, Duluth, Minn
Dir: L E Stein, Salt Lake City, Utah
Mines include Terrible Queen, Humboldt Mines groups & outlying Mulvey properties
Under dev

SITTON & DELANEY, INC
Dove Creek
RADIUM #7, TOMBOY, MERCANTILE, BETH, NUCLES, EAST & B, & MICHAEL BRAY MINES, San Miguel co, underground, open-pit, U

SKALLA, A F
Uravan
Gen mgr: A F Skalla
MONOGRAM MINES, 30 mi S of Uravan, underground, U, V
Joe N Skalla, mine fore
PAWN SPRINGS MINE #9 & 12, underground, U, V
Under dev
ANNA MAY & DOG TAIL MINES, Montrose co, U

SKIDMORE MINING CO
Dove Creek
Owner & gen mgr: T H Skidmore
LEGIN GROUP, SAMS & KING #2 MINES, 23 mi N of Dove Creek, underground, U, V
W J MacCormick, mine supt

THE SLIDE MINES, INC
401 Security Bldg, Denver
Receiver: J F Little
SLIDE MINE & BLACK CLOUD MINE, 10 mi NW of Boulder, underground, Au, Ag, Pb, Cu, Zn
125 TON GRAVITY-FLOT MILL
Idle

SLATE RIVER MINING CO
Crested Bluff
Mgr: R E Simpson
Supt: G H Kelsey
EUREKA MINE, Gunnison co

SMALL SPOT MINING CO
Grand Junction on Orchard Mesa
Mgr: Fred Stern
ELLA CRAIG & SMALL SPOT CLAIMS, Mesa co, U

SOUTH PLATTE DREDGING CO
1805 Mills Tower, San Francisco, Calif
Pres: R W Derby, Sr
Gen mgr: R W Derby Jr
Secy: Geo W Wilson
Treas: L Sutter
SOUTH PLATTE DREDGING CO, Dredge #1, Fairplay, Park co, Au, Ag
Mgr: Webb Skinner, Fairplay Office
A E Dinkelman, mine supt
James H Freeman, shop fore
Bert Thomas, elect engr
5,000,000-yds Bucket Dredge yearly

SOUTHWEST METALS
Ouray
Owner & mgr: F C Liethardt
MOUNTAIN MONARCH & MICHAEL BREEN MINES, located in Ouray co, underground, Pb, Au, Zn, Ag, Cu
Oren A Fulghum, supt
500-ton prod monthly

SPRAY, EDWIN C
1597 Washington St, Denver 5
SWEET HOME MINE, 4 mi up Buckskin Gulch from Alma, Park co, underground, Ag, Cu, Pb, Zn, Under dev

STAATS, LOWELL
Rt 2, Box 210, Grand Junction
HUMMER CLAIM (Joe Dandy Group), Montrose co, U

STAMINA MINING & MILLING CO
Hillside
Pres: W B Porch Jr, Okla City, Okla
Gen mgr: W B Porch, Hillside
Underground Mine, Au, Ag, Cu
E F Stacy, mine supt
E A Porch, engr
75-TON GRAVITY FLOT MILL

STONE, HAROLD
Uravan
ROCK HAVEN CLAIM, Uravan area, U
Lessor: USV

STONE, J W, MINES
Ohio
Owner & gen mgr: J W Stone
WAYNE LODE, BERTHA, BONANZA QUEEN & BUCKEYE CHIEF MINES near Ohio, Au, Ag, Pb
12-TON BALL MILL

STRATTON CRIPPLE CREEK MINING & DEVELOPMENT CO
Box 176, Colorado Springs
Pres: David P Strickler
VP: Carl W Chamberlin
Secy-treas: Herbert L Stubbs
MINES on BULL & GLOBE HILLS, CRIPPLE CREEK & VICTOR, Box 140, Cripple Creek, underground
James H Keener, supt

SUMMITVILLE CONSOLIDATED MINES, INC
Summitville, Co, Au, Ag
Gen mgr: B T Poxson
Frank Sigfird, mine supt
O F Bradley, mill supt
300-TON CYANIDE FLOT MILL

SWEET HOME MINE
(See Spray, Edwin C)

TANNER, GUY & JOSEPH SMITH
Boulder, W, concentrate

TEAL, GEORGE H, & ASSOCIATES
TUNGSTEN MNG & MLG, Box 37, Boulder
Pres & gen mgr: George H Teal
RED STONE MINE, Boulder, W
Sid M West, mine supt
Walter E Swanson, mill supt
25-TON GRAVITY MILL

TELLER BASIN MINING & MILLING CO
Montezuma, Colo
Mgr: L E Newell, Denver
CHAUTAUQUA MINE, Summit co

TELLURIDE MINES, INC
Telluride
Pres: E S McCurdy
VP & mill supt: John Ferguson Jr
Gen mgr: C F Parker Jr
Bus mgr & secy-treas: Clyde Nettleton
SMUGGLER UNION & TOMBOY GOLD MINES, Upper San Miguel Dist, San Miguel co, Au, Ag, Pb, Zn, Cu
T E McCandless, mine supt
A C Hilander, ch engr
C V Teis, ch electrician
Elton W Geist, asst mill supt
550-TON GRAVITY-FLOT MILL

THEOBALD, ROBERT A
Breckenridge
MANERVA MINE, Summit co

TIDWAY & SCHUMWAY
Naturita
THUNDERBOLT MINE, Montrose co, U

TORRES, DAVE
Naturita
4AY DAY MINE, San Miguel co, U

TRAIL CREEK MINING CO
Idaho Springs
GEM TREE MINE, Clear Creek co

TREASURE MOUNTAIN GOLD MINING CO
Midland Savings Bldg, Denver
Pres: Guy L V Emerson
SANDIAGO, SAN JUAN, QUEEN, GOLDEN FLEECE & SCOTIA MINES, Silverton, underground, Au, Ag, Pb, Zn
E R Abadie, mine supt
FLOT MILL
Under dev

TRONIMEL, JESS
Gateway
FLAT TOP MESA CLAIM, Mesa co, U

TYONE MINING CO
Box 488, Idaho Springs
Partners: S V Guerin, Walter R Smith & W D Fenicle
TYONE MINE, Cascade Mng Dist, Cripple Creek
W D Fenicle, mine supt
George Treder, assy
Under dev

UNITED EMPIRE GOLD MINES & UNITED MINES CO
19 Citizens Natl Bank Bldg, Boulder
AMERICAN MINE, Au, Ag, Cu, Pb, Zn

UNITED GOLD MINES CO
Box 127, Cripple Creek
Pres: Merrill E Shoup
Gen mgr: Max W Bowen
Asst gen mgr: Harold S Worcester
Gen supt: Charles H Carlton
VINDICATOR, PORTLAND & UTM GROUP MINES, 3 mi N of Victor, underground, Au
Alfred H Bebee, mine supt
Idle

UNITED STATES GYPSUM CO
300 W Adams St, Chicago 6, Ill
(For officers see Calif listing)
Open-pit gypsum mine at Loveland

UNITED STATES VANADIUM CORP
30 E 42nd St, New York 17, N Y
Pres: W J Priestley
VP: W E Remmers
VP: J E Horn
VP: G F Holmgren
VP: J H Spillane
COLORADO OPERATIONS, Electric Bldg, Grand Junction
Gen supt: J W Hill, Grand Junction
Office mgr: C P Martin
Vanadium mine & mill at Rifle, V
A G Lundquist, supt
J F Brenton, mill supt
Mine & mill at Uravan
J E Hopkins Jr, mill supt
Everett Paris, mine supt
200-TON ROAST-LEACH PL

VALLEY MINES, INC
Box 939, Leadville, Au, Ag, Cu, Pb, Zn
Pres: Fred H Rice
VP & cons engr: Charles A Hopkins
Lessees: Sundstrum & Conners, New Monarch Lease
200-tons prod monthly

VANADIUM CORP OF AMERICA
420 Lexington Ave, New York 17, N Y
Pres: Wm C Keeley, N Y
VP chg mng: D W Viles, Durango
Exec VP: P J Gibbons, N Y
Compt: B O Brand, N Y
Purch agt: Sigmund Stewart, Niagara Falls
Treas: L E Miller, N Y
Underground, open-pit at Naturita
100-TON ROAST-LEACH EXTRACTOR
D E Harrison, gen supt
Booth Eckman, mine supt
Dale C Prior, mast mech
Leroy Parker, elec supt
L J Daniels, pl supt
100-TON ROAST-LEACH EXTRACTOR at Durango
W L Anderson, gen supt
Robert Ketzer Jr, ore receiving clk
H W Rathman, ch met
John W Maxwell, prod supt
James E Fesler, wks acct
T N Newland, pl supt
Geo H Snyder, mines Auditor

VENTURE LEASING CO
Silverton
MINE in San Juan co

VERMICULITE MINING CO
Box 109, Westcliffe
Pres: Stanley G Gray, 400 Thorpe Bldg, Minneapolis, Minn
GEM PARK VERMICULITE MINE, Westcliffe, open-pit
Dick Colgate, mine & mill supt
T A Johnson, mill fore
150-TON GRAVITY-FLOT MILL

WADE, TROY E & CO
Cripple Creek
Mgr: Troy E Wade
VINDICATOR MINE, Cripple Creek Dist, Au

WALKER, ART R
Silverton
Owner: Loretta Giroux Drosseau, 960 E St Joseph St, Montreal, Canada
QUEEN ANNE MINE, San Juan co

WALKER, J L & ASSOCIATES
Uravan
THAMP MINE, Montrose co, U

WEEMS-WEAVER MINING CO
Box 209, Salida
Lessees: S E & W E Burleson
ANTORO MINE near Bonanza, Box 387, Salida, underground, Au, Ag, Pb, Zn, Cu
Operated on split-check basis
John Carey, contractor
10-tons prod daily

WESTERN GOLD MINES, INC
c/o Silas P Silverman, pres, Crown King, Ariz
Mine located on Rito Seco property near San Luis, in Costilla co, Colo, Au
Under dev

WESTERN NON-METALLICS CO
330 W "D" St, Pueblo
Mica Grinding pl
400-tons prod monthly

WESTERN STATES MINING CO
190 Alhambra St, San Francisco 23, Calif
Pres: Dr C D Goodman
Secy: Miss Lillian Witt
Gen mgr & engr: Frank Witt
AJAX MICA MINE, Box 396, Idaho Springs, open-pit, mica

WILFLEY LEASING CO
2310 Ash St, Denver 7, Colo
Secy: A J Anderson
WILFLEY MINE, Kokomo, Summit co, underground, Au, Ag, Pb, Zn
Geo D Harrison, supt
300-TON GRAVITY MILL

WILLIAMS, LAWRENCE
Gateway
BLACK MAMMY MINE, Mesa co, U

WILLIAMSEN, HARRY M & SON
720 U S National Bank Bldg, Denver
Gen mgr: Harry M Williamson
WANO GOLD MINE & FLUORSPAR PROPERTIES, Fluorspar
GRAVITY-FLOT MILL
100-tons prod

WILLMARTH MINES
Georgetown
Owner & operator: O Barlow Willmarth
STERLING SILVER GROUP, underground, Au, Ag, Pb, Zn
Karl C Elsher, mine fore
BIG BERTHA GROUP, Argentine Mng Dist, Clear Creek co, Au, Ag, Pb, Zn
Under dev

WRIGHT BROTHERS
Uravan
PROD CLAIM, Uravan area, U
Lessor: U S V

WRIGHT, WARREN
Gateway
VANAKING #1 & 2, Mesa co, U

IDAHO

ACE GOLD MINES, INC
315 Weisgerber Bldg, Lewiston
Pres: B J Nigg
Gen mgr: F C Funke
Carl B Funke, mine supt
H W White, mine fore
NEW YORK GROUP in Ten-Mile Dist, near Golden, underground, Au, Ag, W
50-TON GRAVITY-FLOT MILL
Under dev

AMERICAN SILVER MINING CO
129 W 4th Ave, Spokane
Pres & gen mgr: E W Conrad Jr
VP: J M Henneck
Dir: H C Snyder
AMERICAN SILVER MNG CO, 1 mi S of Osburn, underground, Ag, Cu
Under dev

AMERICAN SMELTING & REFINING CO
120 Broadway, New York City, N Y
(For Officers, see Eastern listing)
Idaho operations office, Wallace
Mgr: J E Berg
Purch agt: P L White
JACK WAITE MINE at Duthie, underground, Ag, Pb, Zn
Harvey LeBault, mill supt
W E Hurd, acct
500-TON FLOT MILL

AMY SILVER-LEAD CO
Box 358, Kellogg
Pres & gen mgr: C Anderson
Secy: Christine Brown
AMY & AMY MATCHLESS MINES, 6 mi W of Kellogg, underground, Ag, Pb, Zn, Idle
FLOT MILL

ANACONDA COPPER MINING CO
25 Broadway, New York City, N Y
(Co officers are listed under Anaconda Copper Mng Co, Mont)
IDAHO MNG OPERATIONS, Butte, Mont
VP chg of western operations: E K Hall
Mgr of mines: A C Bigley
MINE at Conda, Phosphate Rock
L E Traeger, mine supt
Walter Dezell, mine fore
400-TON CRUSHING & DRYING PL
SUNSET GROUP, Beaver & Summit dist, Kootenace (under lease), Pb, Ag, Zn

ANCHOR MINES, INC
330 W 6th St, Los Angeles 14, Calif
Pres: C W Turner
GOLDEN ANCHOR MINE, 55 mi N of McCall, underground, Au, Ag
FLOT MILL

ANDERSON, A G
Mackay
Lessees: Arthur G Anderson & C R [illegible]
HORSESHOE MINE, 4 mi SW of Mackay, underground, Pb, Ag
100-tons yearly Smelter output
Under dev

ANTIMONY GOLD ORES
246 Bonna Bldg, Boise
Pres: J J Oberbillig
SUGAR CREEK GROUP, Yellow Pine Mng Dist, Au, Ag, W
JOHNSON CREEK GROUP

APACHE MINES CO
236 S Locust, Jerome
Pres: O J Bothne
Mgr: K W Snyder
Purch agt: O L Bishop
77 patented & unpatented claims in the Bullion & Red Elephant Gulches, Minery Hill Mng Dist, 4 mi W of Hailey
MINE, underground, open-pit, placer, Au, Ag, Cu, Pb, Zn, Fe
F N Plughoff, mine supt
J Lanning, mine fore
150-TON FLOT MILL
Under dev

AUSICH, JOSEPH L
Box 281, Mackay
CHAMPION MINE, Custer co, Pb

BANNOCK APEX MINES, INC
Arbon
Pres: Lee A Newport
Dir: Wm Allard
MINE at Arbon, Cu, Pb, Zn, Au, Ag, Cr, Ni, Fe, Mo, V, Mn
Gen mgr: Lee Newport

BIRCH CREEK MINING CO
250 Broadway, Idaho Falls
Pres & gen mgr: George Brunt
Secy & mgr: L S Merrill
SCOTT MINE, Star Rt, Du Bois, Ag, Pb
N T Shane, engr

BLACK BEAR MINES CO
Wallace
Pres: Walter H Hanson
BLACK BEAR GROUP, near Gem, Pb, Zn, Ag
Lessee & option holder: G W Ringel

BOISE KING PLACERS
Twin Springs
Pres: George G Titzell
MINE in Bear Creek dist, Atlanta, 7½ cu ft bucket dredge, Au, Ag

BOULDER MINES INC
Box 47, Ketchum
Pres & gen mgr: George C Castle
Secy-treas: A W Ensign
BOULDER MINES, 17 mi N of Ketchum, underground, Au, Ag, Pb

BRADLEY MINING CO
425 Crocker Bldg, San Francisco, Calif
Pres: Worthen Bradley
Exec VP: John D Bradley
VP: James P Bradley
Secy: E A Griffin
IDAHO OFFICE, Bradley Field, Boise
Chg of operations: John D Bradley
Mgr: E E Coleman
Asst mgr: J A Mecia
Purch agt: Lewis D Richardson
Design supervisor: John D Nicholson
Cascade agt: Harry O Harp
Personnel mgr: Ben F Mahoney
Asst personnel mgr: Joe Zarbnisky
Ch clk: Home J Shaw
YELLOW PINE MINE at Stibnite, open-pit with underground dev, Sb, W, Au, Ag
Edwin C DeMoss, mine supt
Henry J Servant, asst mine supt
George H Hansen, equipment supt
Jesse V Griffiths, asst elec supt
2,400-TON FLOT CONCENTRATOR
YELLOW PINE SMELTER: roasters, electric furnace, refining, converting & reduction furnaces, antimony metal & antimony oxide
John R Clarkson, mill supt
Silas L DuPoo, asst mill supt
Frank P Sounders, smelter supt
A M Wilson, asst smelter supt
Robert J McRae, research met
IMA MINE at Patterson, W, Ag, Pb, Cu
Charles Hawthorne, mgr
125-TON GRAVITY-FLOT MILL

BROUGH, FRED J
Salmon
POPE-SHENON (Grandview) MINE, Lemhi co, Cu

BUCHMAN, BRECKON & NORDEN PARTNERSHIP
Clayton
Gen mgr: J A Norden
RED BIRD MINE, 6 mi NW of Clayton, underground, Ag, Pb
400-500 ton monthly prod

BUNKER HILL & SULLIVAN MINING & CONCENTRATING CO
Box 29, Kellogg
Pres: Stanly A Easton
VP, dir, & gen mgr: J B Haffner
Asst-secy: Ira A Robson
Purch agt: E P Biotti
FLOT MILL, SMELTER & 400-TON FUMING PL & ANTIMONY PL
3,000 tons capacity with Sink-Flot unit
Ag, Pb, Zn
E McDougall, mine supt
R B Hooper, asst mine supt
C T Garber, mill supt
Frank McKinley, asst mill supt
C E Brown, engr
A C Stevenson, mech & electrical engr
T C Feddersen, smelter supt
J B Schuettenheln, asst smelter supt
30,000-tons prod monthly from mine, balance of mill feed from old jig tails

CABIN MINE
Reno dist, Lemhi co, Pb
Operator: Frank G Worthing, Winsper

CALERA MINING CO
Blackbird Division, Forney
Pres: H H Sharp, New York
Mgr: E B Douglas, Forney
VP's: H A Pearse, V H Clarke & E Richter, New York
Purch agt: J W Caples
BLACKBIRD MINE (UNCLE SAM GROUP), 42 mi W of Salmon, underground, Co, Cu
C J Whitley, mine engr
R B Meen, mine fore
J P Salyer & W C O'Neal, mine shift-bosses
J P Smith, elect engr
A W Legard, mech engr
R R Richardson, chief acct
C O Hower, mill supt & met
Frank Tipton, assy
FLOTATION MILL
Smelter under construction

CALLAHAN ZINC-LEAD CO
100 Park Ave, New York, N Y
Pres: Joseph T Hall
VP in chg of operations: R F Mahoney
VP: Julian B Beaty
VP: Harold J Hull
Secy: Alfred Ogden
Treas: E A Sald
VULCAN SILVER-LEAD CORP, property leased to American Smelting & Refining Co, Subsidiary of Callahan

CAMAS TRUST MINING CORP
Eastman Bldg, Boise
Dir: G P Williams
Pres: C E Carver
Mine in Mineral dist, Hailey, Au, Ag, Pb, Cu
Under dev

CANYON CREEK MINES
1115 Vermont St, Boise
Owner, supt & engr: Hal Baker
CANYON CREEK MINE at Idaho City, Au, Ag, Cu, Pb, Zn
Under dev

CAPITOL SILVER LEAD MINING CO
Gearon Bldg, Wallace
Pres: H C Mowery
VP: Matt Bogovich
Secy-treas: H M Huemann
Ag, Pb
Under dev

CHILDS, ELDON
20 E 48th South St, Murray Utah
HOPEFUL CLAIM, Custer co, Pb, Zn

CLAYTON SILVER MINES
Box 890, Wallace
Pres & gen mgr: Wm Yeaman, Yakima, Wash
VP: A H Featherstone
Secy: Ray Morrison
Mines at Clayton, underground, Au, Ag, Cu, Pb, Zn
Mgr: R J Legard
H E Strong, mine fore
Norman Smith, engr
Alfred Nelson, mill fore
110-TON FLOT MILL

COEUR D'ALENE MINES CORP
Gearon Bldg, Wallace
Pres: H C Mowery
Gen mgr: Mike Kinsella
VP: Frank McKinley
Secy-treas: W A Callaway
Purch agt: William P Wylie
MINERAL POINT MINE, Osborn, underground, Cu, Ag, Sb
Steve Vaclav, mine fore
Fred Morin, mech & elec engr
Peter Mack, assy
600-TON FLOT MILL
Under dev

COEUR D'ALENE SILVER GIANT, INC
Mining Exchange Bldg, 410 Main St, Kellogg (Box 838)
Pres & gen mgr: Harry G Alway
VP & dir: R E Neyman
Secy-treas & dir: Wayne A Brainard
Mine on E Fork of Big Creek, near Kellogg, Ag, Pb
Freston & Reynolds, engrs
John B Platts, engr
Under dev
82 lode claims in Evolution Mng dist of Shoshone co under working contract

CONTINENTAL MINING CO
Box 469, Wallace
Pres: S K Garrett
VP: J E McKay
Secy: L J Randall
CONTINENTAL MINE, Porthill, Pb, Ag
J J Snider, mill supt
500-TON HMS PL: 100-TON FLOT MILL

CRAMPTON, T S
Centerville
Claims near Pioneerville, Au, Zn
Under dev

CUBA MINING CO
Wallace
Pres: Walter H Hanson
Property on Nine Mile Creek, 2 mi from Wallace, Ag, Pb
Under dev

CUDDY MOUNTAIN MINING CO
711 Hutton Bldg, Spokane 8, Wash
Pres & gen mgr: W R Bellows
Secy: Wellman Clark
BLUE DOG MINE, Weiser, open-pit, Au
Under dev

CUSTER COPPER CORP
4212 Franklin Road, Boise
Pres & gen mgr: W P Barton
VP: David E Bell
EMPIRE MINE, Mackay, underground, Cu, Au, Ag
David E Bell, mine supt & mine fore
100-TON FLOT MILL
Under dev

DAISY MINING & MILLING CO, LTD
916 Larson Bldg, Yakima, Wash
Pres: S D Parker
Mine near Hailey, Au
Leased to Camas Trust
Under dev

DARLAND, JOHN & T A
Cuprum
SOUTH PEACOCK MINE, 48 mi NW of Council, underground, Au, Cu, Ag
Under dev

DAY MINES, INC
Wallace
Pres & gen mgr: Henry L Day
VP: Paul B Jessup
Purch agt: George T Kelton
Gen supt: Rollin Farmin
AURUM GROUP MINE, 2 mi NW of Republic, underground, Au, Ag
Idle
DAYROCK, MONITOR, TAMARACK, SHERMAN & HERCULES MINES, Wallace, underground, Pb, Zn, Ag
Lewis A Grant, mill supt
4 FLOT MILLS
20,000-tons prod monthly

DENVER DEVELOPMENT CO
Box 989, Kellogg, (Lessees)
Partners: Dunham Bell, Inar Norgaard & Claude E Nugent
Purch agt: D Bell
LITTLE PITTSBURG MINE on Pine Creek, underground, Ag, Pb, Zn
Inar Norgaard, mine supt
Harold G Rouse, mill supt
Walter B Jarvey, mine fore
Claude E Nugent, engr
150-TON FLOT MILL

DIAMOND PEAK MINES CO
Arco
Pres: A W Barnes
Gen mgr: M M Dahle
Secy: R C Walker
BADGER MINE at Arco, Ag, Pb, Under dev

DOME MINES
Howe
WILBERT MINE at Howe, Pb, Ag
Gen mgr & purch agt: W H Gibson
Mgr: C A Dye
C Mac Dye, mine fore
200-TON FLOT MILL

ECHO MINING CO
Wallace
Pres: Walter H Hanson
Property located at Burke, Ag, Pb
Under dev

EDITH MURPAY MINING CC
404 American Legion Bldg, Spokane 8, Wash
Pres: Marvin C Meddock
Secy-treas: A T Slawson
Purch agt: Jerry Grater
Mine at Box 371, Murray, Ag, Pb, Zn
Barkley G Goodsell, engr
Harry Edwards, elec
Under dev

FEDERAL MINING & SMELTING CO
Wallace
Pres: K C Brownell
VP: H F Goodwin
Gen mgr: J E Bert
Personnel mgr: L E Markel
Purch agt: Percy L White
George E Price, gen mill supt
W J Coombe, supt of mines
W A Boyer, mech & elect engr supt
George Deshler, met
PAGE MINE, Page
Phil Demaree, foreman
Troy M Tower, supt
M J McCandless, asst
Roy McKinley, mill supt
E R Kappel, asst supt
800-TON FLOT CONCENTRATOR
MORNING MINE, Mullan
Earl Brasher, fore
R F Walters, supt
A P Nelson, asst supt
1,200-TON FLOT CONCENTRATOR
FRISCO MINE, Gem, Ag, Pb, Zn
C R Christian, supt

FLAGSTAFF MINING CO
Kennewick, Wash
Pres: A H Behrman
MINE in Bear Creek dist, Rocky Bar, Au, Ag
50-TON MILL

GAMBRINUS SURPRISE CO & ILLINOIS MINE
Idaho City
Pres: Elvin T England, Seattle, Wash
Gen mgr: C M Lovenstein
Purch agt: J W Duquette
ILLINOIS & SURPRISE MINES, Au
Vern E Clayton, engr
10-TON STAMP MILL

GARFIELD SILVER LEAD MINES, INC
Hailey
Pres & mgr: L F Heagle
VP: Dr E W Fox
Secy-treas: D M Jacobs
GARFIELD & WESTLAKE MINES at Hailey, Ag, Pb, Zn, Fe
Deston D Dehlin, mine supt
Arthur Lakes, geol & engr
GARFIELD MINE at Muldoon, Au, Ag, Pb, Zn
Deston Dehlin, mine fore
Arthur Lakes, geol & engr
EAGLE BIRD MINE, Little Wood River dist, Pb, Zn

GENERAL MINES CORP OF IDAHO
416 Empire State Bldg, Spokane, Wash
Pres & gen mgr: H G Loop
Secy: E I Fisher
Dir: Chris Robolt
GENERAL MINE, Star Rt, Pine Creek, Kellogg, Idaho, Au, Ag, Sb
John B Platt, engr
Under dev

GOLCONDA LEAD MINES, INC
Rossi Insurance Bldg, Wallace
Pres & gen mgr: A H Featherstone
Secy-treas: W H North
GOLCONDA MINE, 3 mi E of Wallace, underground, Pb, Ag, Zn
Wray Featherstone, mine supt
Theodore Reel, mine fore
C E Bloom, mill supt
Richard Holmberg, mill fore
Richard May, elec engr
Peter Mack, assy
225-tons prod daily from Custom Flot Mill
1,000-tons prod monthly

GOLD HUNTER MINES, INC
R 1501 111 W Washington St, Chicago 2, Ill
Pres: James D Murphy
Gen mgr: L M Norris
GOLD HUNTER MINE, E of Mullan, Ag, Pb, Zn
500-TON FLOT MILL
Idle

GOLDEN DIVIDEND MINE
Idaho City, Au
Owner: Chester Lamb, 1708 Boise Ave, Boise
Under dev

GOLDEN SEAL MINING & MILLING CO
Box 2307, Boise
Pres: E K Lorimer, Los Angeles, Calif
Secy: M German, Boise
Mine near Dry Creek
Under dev

GRANADA LEAD MINES, INC
Box 257, Wallace
Pres: James A Wayne
Gen mgr: A H Featherstone
VP: Ross L Roundy
Purch agt: W H North
GRANADA MINE, Wallace, Ag, Cu, Pb
Ross L Roundy, mine supt
Under dev

GREGOR MINES, INC
1519 First Ave, Seattle 1, Wash
Pres: Carl H Mengedoht
Gen mgr: W M Parsons
Secy-treas: Chas H Woodis
MONOLITH MINE, Shoup, Au, Ag, Pb
Paul M Sorensen, res mgr & engr
Butch Tibbetts, mill fore
60-TON FLOT MILL

H & H MINES
1302 Public Service Bldg, Portland, Ore
Owner & gen mgr: John C Higgins
RED HORSE PLACER, Elk City, Au, Ag
William J Noon, mine supt
Carl N Anderson, engr
Don B Inghram, dredgemaster
1500-YD BUCKET DREDGE

HACKET, HERBERT H
Riggins
SHAMROCK GROUP, Florence & French Creek dist, placer, Au, Ag
Hydraulic dredge
Under dev

HAYDEN HILL CONSOLIDATED MINING CO
612 Chronicle Bldg, Spokane 8, Wash
PURIM GROUP in Silver Belt, Evolution Mng dist, Coeur D'Alene
Under dev

HAY FORK MINE
Idaho City
Operator: Hal R Jarvis, Idaho City, Au, Ag
10-TON BALL MILL
Under dev

HECLA MINING CO
Box 320, Wallace
Pres & gen mgr: L E Hanley
VP: A W Witherspoon
Gen supt: R W Neyman
Purch agt: R G Hull
Norman J Sather, mill supt
R E Sorenson, mine engr & geol
Lee Messerly, mine fore
J M Simpson, assy
HECLA MINE in Burke, (Idle), Pb, Zn
800-TON FLOT CONCENTRATOR

HEINE, A L, MINES, INC
Meridian-Boise-Bellevue
Pres: Clinton Barber, Meridian
VP: James Hawley
Secy-treas: Dr A L Heine
Dir: Guy Lee
Dir: Gold Dunten
BELLEVUE GOLD GELENA, Bellevue, Au, Ag, Cu, Pb, Zn, Mn, V
24-TON BEAM SMELTER
Under dev, small prod

HERMADA MINING CO
Twin Springs
Pres: Ernest Oberbillig
Mgr: Gilbert Pearson
VP: Jess Hawley, Jr
Secy-treas: Carol Oberbillig
HERMADA MINE, 20 mi W of Atlanta, open-pit, Sb
20-tons prod monthly
TALACHE CUSTOM FLOT MILL in Atlanta

HIGHLAND-SURPRISE CONSOLIDATED MINING CO
Gearon Bldg, Wallace
Pres: F J Luedke, Spokane, Wash
Gen mgr: F H Mitchell
VP: H C Smith
Secy-treas: W A Callaway
Gen mgr: Robert D O'Brien
HIGHLAND-SURPRISE MINE, Pine Creek, near Kellogg, underground, Zn, Pb, Ag
John B Platts, geol
Victor Giroux, mine fore
Robert A Rice, mill fore
300-TON FLOT MILL
2400-tons prod monthly

HOPE GROUP QUARTZ
Elk City
Owner: Schuyler Simmons
Two stamp Gravity Mill, Au, Ag
Under dev

HOPE SILVER-LEAD MINES, INC
Box 152, Clark Fork
Pres: Glenn C Lee
Secy-treas: L P Larson, 112 Garden Ave, Coeur d'Alene
VP: Ed Groenig
Second VP: Paul Schroeder
HOPE MINE at Clark Fork, underground, Pb, Ag, Zn
Elmer T Shields, mine fore
Harold Shields, engr
150-TON FLOT MILL
Under dev

HORNSILVER MINING & MILLING CO
Wallace
Pres: Walter H Hanson
Property, 3½ mi S of Wallace, Ag, Pb
Under dev

HULL LEASE
Wallace
Gen mgr: H J Hull
Purch agt: August Voltolini
GEM & FRISCO MINES, Gem
Harry Voltolini, mine supt
Fausto Voltolini, mill supt
100-TON FLOT MILL

HYPOTHEEK MINING & MILLING CO
510 Bank St, Wallace
Pres: R L Brainard
Mgr: Roy H Kingsbury
HYPOTHEEK MINES, Kingston, Au, Ag, Pb
John T Kingsbury, mine supt
Under dev

IDAHO BERYLLIUM AND MICA CORP
Troy
Chairman: C V Peckham
Pres: H G Peckham
Secy: Lawrence Smith
CLAIMS on Mica Mountain, Latah co, Mica, Beryl & other rare earths
MICA GRINDING MILL at Muscovite & Lawrence

IDAHO-CANADIAN DREDGING CO
Box 2127, Boise
Pres & gen mgr: H B Murphy
VP: Miles M Young
Secy-treas: Geo E Murphy
IDAHO-CANADIAN DREDGING CO, 40 mi N of Boise, placer, Au, Ag
Bucketline Dredge
Miles M Young, mine supt
W J Bennett, asst mine supt

IDAHO CONSOLIDATED MINES
4109 Arcade Bldg, Seattle 1, Wash
Pres: Edmund G Wilson
VP: Richard D Tripple
Secy: G R Bevell
Gen mgr & purch agt: Edmund G Wilson
Gen supt: Charles Kapp
TWIN PEAKS MINE, 20 mi S of Salmon, underground, Pb, Cu, Ag, Co
Charles Kapp, mine supt
Allen C Merritt, mine engr
Edmund G Wilson, elec engr
Richard D Tripple, met
75-TON FLOT MILL
Under dev

IDAHO GARNET ABRASIVE CO
Box 1452, Spokane, Wash
MINE near Fernwood, Garnet sand, placer
1,000-yd Dragline dredge

IDAHO GOLDFIELDS, INC
1114 W Indiana, Spokane 12, Wash
Pres & gen mgr: W M Fredericks
Secy-treas: James Milne
DONAHOE LEASE, 1 mi E of tunnel on #10 Hwy between Kellogg & Coeur d'Alene, Pb
Edgar A Gerling, mine fore, Rose Lake
Under dev
BLACK ROCK MINE, Wet Gulch, Lucile, open-pit, Au
Under dev

IDAHO LAKEVIEW MINES CO
502 Columbia Bldg, Spokane 8, Wash
Pres: Jerome L Drumheller
Secy: L R Gordon
Secy-treas: Harl J Searl
IDAHO LAKEVIEW MINE near Lakeview, Ag, Pb, Zn
Earl A McDaniel, mine & mill supt
100-TON FLOT MILL

IDAHO STAR MINING CO
E 1302 Neward Ave, Spokane, Wash
Pres: R T Lawrence
MINE in St Joe dist, near Avery, Au, Cu, Co

IDAHO-WARREN DREDGING CO
Centerville
Pres & gen mgr: A F Baumhoff
Secy-treas: G T Eyman
ELK CITY & YANKEE FORK MINES, Au
J R Johnson, dredgemaster
4,000-YD BUCKET DREDGE

INDEPENDENCE PLACER MINING CO, LTD
Hyde-Taylor Bldg, Wallace
Pres: William Fahle
MOOSE CREEK MINE at Moose City, Au
Under lease to M J Mullins & Associates, Moses Lake, Wash

IRON MOUNTAIN MINING CO
7th & Commercial Sts, Weiser
Pres: C L Randall
Dir: G L Petrashek
Au, Ag, Cu, Pb
Frank Mortimer, mine supt
Under dev

JACK WAITE MINE
(See American Smelting & Refining Co)

JESSIE MINE
Summit Flat dist, Boise co, Au
Operator: L M Sloper, Eagle
35-TON MILL

JUNEDAY TRUST
601 Eastman Bldg, Boise
Trustee: G P Williams
Trustee: C E Carver
MINE in Minerals Hill dist near Hailey, Cu, Ag, Au, Zn
Under dev

KING OF PINE CREEK MINING CO
612 Chronicle Bldg, Spokane, Wash (also owns 15% interest in Carbonate Mines, Inc, 4 mi SW of Marysville, Mont)
Pres: C C Anderson
Secy: L Howe
MINE at Wallace
C O Dunlop, gen mgr
E G Gnaedinger, mgr
Under dev

LARSON, R W
South Fork Lodge, Golden
SOUTH FORK MINE, 11 mi E of Golden, underground, Au, Ag
Under dev

LAWRENCE CONSOLIDATED MINING CO
Clark Fork, Pb, Ag
Pres: Compton I White
Secy: Compton I White Jr
50-TON CONCENTRATOR
Under dev

LEAD BLOSSOM MINING CO
Wallace
Pres: Walter H Hanson
Property in the City of Wardner, Shoshone co, Ag, Pb
Under dev

LEWIS MINE
Carson dist, Owyhee co, Au
Operator: John A Turner, Homedale
150-TON AMALGAMATION MILL

LIVINGSTON MINES, INC
3210 W 74th St, Seattle, Wash
Pres: Harry C Petrie
Gen mgr: Henry Mears
LIVINGSTON MINE in Bayhorse dist, 16 mi S of Clayton, Pb
200-TON MILLING PL

LOOKOUT MOUNTAIN MNG & MILLING CO
Mng Exch Bldg, 410 Main St, Kellogg, (Box 838)
Pres: William Penny
Gen mgr: Lester S Harrison
Secy: Wayne A Brainard
LOOKOUT MT MINE at Pine Creek, Pb, Zn
Under dev

LUCKY FRIDAY SILVER-LEAD MINES CO
Wallace
Pres: John Sekulic, Mullan
MINE in Hunter dist, near Mullan, Pb, Ag Zn, Cu
Under dev

MACKAY EXPLORATION CO
4212 Franklin Road, Boise
Pres: W P Barton
VP: David E Bell
EMPIRE MINE, 3 mi W of Mackay, Cu, Au, Ag
Under dev

MAMMOTH MINE
Dixie dist, Idaho co, Au
Operator: George Grebe, Grangeville
24-TON AMALGAMATION MILL

McGREGOR MINING CO
Box 45, Cataldo
Pres: M C Jacobson
Secy: Mrs Grace Jacobson
McGREGOR MINE, Cataldo Gulch, Au, Ag, Cu, Pb, Fe
Under dev

MERGER MINES CORP
Box 454, Coeur d'Alene
Pres: C H Hunter
Secy-treas: John B Nelson
VP: W L Erwin, Wallace
MINE in Evolution dist, Osborn
Glen E good, mine fore
Under dev

METALINE & PINE CREEK CONSOLIDATED MINING CO
502 Hyde Bldg, Spokane 8, Wash
Pres: Frank J Luedke
VP: Harry Homad
Secy-treas: H S Johnston
Controlling stock interest under option to Sullivan Mng Co of Wallace

METROPOLITAN MINES CORP
Box 497, Wallace
Pres & gen mgr: Roy H Kingsbury
Secy-treas: A J Teske
METROPOLITAN GROUP, Evolution dist, Osborn, underground, Ag, Cu, Pb
Under dev by Sunshine Mng Co per mutual agreement

MONARCH GROUP
Murray, Ag, Pb
Owner & operator: Walter H Hanson
Under dev

NABOB SILVER LEAD CO
Wardner, Au, Ag, Cu, Pb, Zn
Pres: Thomas R Jones
Gen mgr: C C Dunkle
MINE, Wallace, Pb, Zn
C V Barto, assy
250-300 TON FLOT MILL

NATIONAL METALS
c/o C A Dye, Hailey, Ag, Pb, Zn
Gen mgr: C A Dye
SENTINEL MINE & Johnson Property in Butte co
HIDDEN TREASURE MINE on Little Smokey River

NEW HILARITY MINING CO
Peyton Bldg, Spokane, Wash, Transfer & accounting office
Pres & gen mgr: Ralph W Neyman
VP: W Brainard
Secy-treas: Edwin K Barnes
Asst secy-treas: E M Borjessan
Mine at Box 943, Wallace
Ralph W Neyman, purch agt, mine supt & engr
Eugene C Iverson, mine fore
Under dev

NORTH FORK DEVELOPMENT CO
Wallace
Secy: Walter H Hanson
Property on N Fork of Coeur d'Alene River in Shoshone co, 15 mi N of Enaville, Ag, Pb
Under dev

OVERLAND TRUST
Hailey
Pres & gen mgr: Hail Parke
Secy: Clara Kittzmiller
Dir: Fred Tintinger
Dir: Frank Parke
OVERLAND & EDRES MINE, Bellevue, underground, Au, Ag, Pb, Zn
A L Anderson, engr
A Hall, assy

PINE CREEK LEAD-ZINC MINING CO
Box 989, Kellogg
Pres: Peter David
LITTLE PITTSBURG MINE, Kellogg, underground, Au, Ag, Pb, Zn
150-TON FLOT MILL

PINE CREEK PLACER CO
Hereford, Ore
Pres: R M Davidson
PLACER MINE, Au
L A Hoalst, gen mgr
Fred Bower, mech engr
Under dev

PLYMOUTH DEVELOPMENT CO, INC
Box 1163, Idaho Falls
PLYMOUTH GROUP, Lemhi co, Pb

POLARIS MINING CO
Wallace
Pres & gen mgr: L E Hanley
VP: J L McCarthy
Secy: John R Matthews
Treas: L J Randall
Asst secy-treas: D W Morehouse
Dir: J L McCarthy
Dir: L E Hanley
Dir: R W Neyman
Dir: A W Witherspoon
Dir: George W Zeller
Purch agt: R G Hull
POLARIS MINE at Osburn, underground, Ag, Cu, Pb
R W Neyman, mine supt
N J Sather, mill supt
R E Sorenson, engr
George Grismer, mine fore
Alex McDonald, asst mine fore
Tom Hydorn, assy
200-TON FLOT MILL

PROFILE TAMARACK MINES CO
c/o E F Slovarp, 504-5 Henry Bldg, Portland, Ore
Pres: R C Roles
Secy: Emil F Slovarp
CENTRAL GALENA GROUP, Yellow Pine, underground, Ag, Pb, Zn
Henry T Abstein, gen mgr & engr
Under dev

QUIGLEY MINING SYNDICATE
308 Blanchard St, Apt 702, Seattle 1, Wash
Pres: W J Logus
QUIGLEY MINE, Hailey, underground, Pb, Ag, Zn
Under dev

RAINBOW MINING & MILLING CO, LTD
Box 889, Wallace
Pres: Dr H C Mowery
Secy-treas: W A Callaway
VP: H M Huemann
RAINBOW #1 GROUP, Evolution dist, Ag, Pb, Zn, Cu
Under dev

RAMSHORN MINES CO
321 Felt Bldg, Salt Lake City, Utah
Pres: William W Murray, San Francisco, Calif
Secy: Leo Eagar
Lessee: W B Swigart
RAMSHORN & BEARDSLEY GROUP, Bay Horse Dist, Challis, Ag, Pb
Under dev

RARE METAL MINES, INC
E 601 Crown Ave, Spokane, Wash
Pres: Arthur L Hooper
MINE in Bonner co, Au, Ag
Under dev

RED BIRD MINE
(See Buchman, Breckon & Norden)

ROCK CREEK GROUP
Box 27, Idaho City, Au, Ag
Partners: John S & A Glenn Larson
7-TON GRAVITY MILL

SIDNEY MINING CO
102 Idaho First Natl Bank Bldg, Kellogg
Pres: W T Simons
Gen supt: M C Brown
Secy-treas: F E Marler Jr
SIDNEY MINE, 15 mi S of Kellogg, underground, Ag, Pb, Zn
Ed Coe, mine supt
C A McKinley, mill supt
Robert Pruess, engr
Zane Smith, mast mech
275-TON FLOT MILL
275-tons prod daily

SILVER BOWL, INC
Mng Exch Bldg, 410 Main St, Kellogg, Box 838
Gen mgr: Ralph W Neyman
Secy: Wayne A Brainard
SENATOR STEWART MINE, Deadwood ... Kellogg, Ag, Pb, Zn
Eugene Iverson, mine supt
John B Platts, engr
FLOT MILL
Under dev

SILVER CABLE MINING CO, INC
127 Brown Ave, Kellogg
Pres & gen mgr: G W Ringle
MINE near Mullan, on Mont-Idaho ... Pb, Zn
Under dev

SILVER CIRCLE MINING CO
W 442 Montgomery, Spokane, Wash
Pres: Maury C Hayden
SILVER STRIKE MINE, SE of Murray, Ag
100-TON FLOT MILL

SILVER CHIEFTAIN CO
612 Chronicle Bldg, Spokane 8, Wash
Pres: Elmer E Johnston
MINE at Osborn, PbS, ZnS, 3CuS, ...
Under dev

SILVER DOLLAR MINING CO
612 Chronicle Bldg, Spokane 8, Wash
Pres, gen mgr: Elmer E Johnston
VP: C C Anderson
Secy: W T Anderson
Purch agt & gen supt: R R Weidemann
SILVER DOLLAR MINE at Osburn, underground, Ag, Pb, Cu
Horace Smith, mine fore

SILVER HILLS MINING CO
1258 Crandall Ave, Salt Lake City, Utah
Pres: A A Firmage
Secy-treas: L M Francis
Managing Dir: Benj Spence
BUSY BEE & JOVEON GROUPS MINES, ... of Strevell, underground
Under dev

SILVER SUMMIT MINING CO
Box 320, Wallace
Pres: Harry F Pearson
VP, gen mgr: L E Hanley
Secy-treas & dir: L S Eddins
Purch agt: R G Hull
Gen supt: R W Neyman
SILVER SUMMIT MINE, 7 mi W of Wallace, Osborne, underground, Ag, Cu
R W Neyman, mine supt
G Grismer, mine fore
R E Sorenson, engr & geol
300-TON FLOT MILL on rental basis ... Polaris Mng Co
160-tons prod daily

SILVER SYNDICATE, INC
Wallace
Pres & gen mgr: W M Yeaman, Yakima, Wash
Secy: A H Featherstone, Wallace
Mine adjoins Sunshine Mine & Big Creek Apex, Au, Cu, Pb, Zn, Ag

SIMPLOT FERTILIZER CO
Box 912, Pocatello
Pres: J R Simplot
Gen mgr: E W Hansen
Purch agt: Austin Richins
GAY MINE, open-pit, Phosphate
John Kobe, pl & mine mgr
Charles W Sweetwood, mine supt
William Tinto, pl supt
Charles A Lee, geol
300-TON SUPERPHOSPHATE PL producing ...
300,000-tons prod annually

SNOOSE MINING CO
First Security Bank Bldg, Hailey
Pres & gen mgr: A M Jensen
VP: W F Smith, Wendover, Nev
Secy-treas: R S Bacon, Twin Falls
Dir: Willard Woods, Jerome
Dir: Bob Reese, Twin Falls
SNOOSE MINE, 2½ mi SE of Hailey, underground, Au, Ag, Pb, Zn
Under dev

SPOKANE-IDAHO MINING CO
611 Peyton Bldg, Spokane 8, Wash
Pres: Frank N Marr
VP: S H Clinedinst
Gen mgr, gen supt & purch agt: J C Kieffer
Treas: Charles E Marr, Jr
CONSTITUTION MINE, Kellogg, Box 930, ... mi SE of Pinehurst, underground, ... Pb, Ag
C F Redding, mine supt
Norman Arneson, mill supt
Onni W Herlin, mech engr
Otto E Haaland, mine engr & assy
Emery F Piscuss, electrical engr
Wm C Miller, James B Lemon, Neio
Wm C Miller, James B Lemon, Neil E ... John T Ratley, mine shiftbosses
180-TON FLOT MILL

SQUARE PEAK MINE
25 mi N of McCall
Partners: F B Frasier, L L Frasier, R J Frasier & A R Roger
Au, Pb, Zn, Ag, W, Cu
G W Frasier, supt & mgr, Weiser
Under dev

STITES & COMPANY
Box 786, McCall
Gen mgr: B M Stites
Dir: Clifford E Enger, Austin, Minn
LUCILE PLACERS, Dragline dredge, Au, Ag
Walter Hovey Hill, engr
Under dev

SUCCESS MINING CO
Wallace
Pres: Henry L Day
SUCCESS MINE, Wallace, Zn, Pb, Ag
Irregular lessee operation

SULLIVAN MINING CO
Wallace
Pres & gen mgr: L E Hanley
VP: E A Easton
Purch agt: R G Hull
Gen supt: R W Neyman
STAR MINE, Burke, underground, Zn, Pb, Ag
R E Sorenson, geol & mine engr
N J Sather, mill supt
ELECTROLYTIC ZINC PL, Silver King
J B Haffner, mgr
W E Woolf, supt
4800-tons monthly Smelter output
950-TON FLOT MILL

SUNSET LEASE
Day Bldg, Wallace
Gen Supt: R Farmin
SUNSET MINE, 10 mi N of Wallace, underground, Zn, Pb

SUNSET MINERALS, INC
1516 W 51st St, Seattle 7, Wash
Pres: O Bardahl
VP & gen mgr: Bliss Moore
Office mgr: G E Dahlstrom
Dir: Lew Hykes
Dir: Paul Petrick
Dir: David Harvey
Dir: Sam A Wright
SUNSET MINERALS, Box 869, Kellogg, Ag, Cu, Pb, Zn
R E Lomas, mine supt
Reynolds & Co, engr
G E Gillingham, geol
100-TON FLOT MILL & SMELTER

SUNSHINE CONSOLIDATED, INC
Kellogg
Norman Smith, direction engr

SUNSHINE MINING CO
Box 1080, Kellogg
Pres: Robert M Hardy
Gen mgr: Ross D Leisk
Gen supt: John Edgar
Directors: Joshua Green & C M Hull
Asst treas: Robert M Hardy Jr
Purch agt: N J Osborne
SUNSHINE MINE, 5 mi E of Kellogg, Evolution dist, underground, Ag, Pb, Cu
John Edgar, gen supt
Wayne D Gould, mill supt
R L Anderson, engr
R F Robinson, geol
Chas Angle, mine fore
C D Anderson, service & maint fore
M F Scott, assy
W B Foster, safety engr
1400-TON FLOT MILL
25,000-tons prod monthly
Exploration Dist, 611 Peyton Bldg, Spokane, Wash
Rowland King, field engr

SUN VALLEY LEAD-SILVER MINES, INC
Box 57, Ketchum
Pres & gen mgr: R L Roundy
VP'S: L O Lindberg, R F Holt & Marvin J Warren
Gen supt, Secy-treas: J R Thornton
NEW HOPE & SUNDAY MINES, 8 mi W of Ketchum underground, Pb, Ag, Zn, Au
Under dev
100-TON FLOT MILL under dev

SWIGERT MINES
Challis
Owner: W B Swigert
PACIFIC MINE & BEARDSLEY MINE, Bayhorse mng dist, Custer co, Au, Ag, Cu, Pb, Zn
100-TON GRAVITY MILL

TALACHE MINES, INC
211 Yates Bldg, Boise
Pres: A H Burroughs, Jr
VP: B K Burroughs
BOISE-ROCHESTER & MONARCH MINES, Atlanta, underground, Au, Ag
Phillip T Peterson, gen supt
J N Groomer, mill supt
H A Hartman, electrician
350-TON FLOT MILL

TRIUMPH MINING CO
Triumph
Pres J W Swent
Gen mgr: A H Shoemaker
Purch agt: Herbert Shear
Mine at Triumph, underground, Au, Ag, Cu, Pb, Zn
L M Robinson, mine supt
C C Livingston, engr
Rupert House, mine fore
M A Jorgensen, mill supt
C O Ray, mech engr
A L Hall, assy
Herbert Shear, compt
200-TON FLOT MILL

TYEE MINING COMPANY
Spokane St Dock, Seattle, Wash
Mine at Elk City, Au, Ag
3,000 yd dragline dredge
C J Sebastian, gen mgr
S K Coates, mine supt

UNITED MERCURY MINES CO
248 Sonna Bldg, Boise
Pres & gen mgr: J J Oberbillig
Mine in Yellow Pine dist, Yellow Pine, Au, Ag, Sb, WO, Hg
120-ton furnace

UTAH-IDAHO MINING & MILLING CO
Paris
Pres & gen mgr: P C O'Malley, Pocatello
Mine near Paris, Pb, Cu, Ag, Au
Under dev

VERDE MAY MINING CO, LTD
Wallace
Pres & gen mgr: Gunnar W Nordquist
VP & ant secy: Walter H Hanson
Mine at Gem, Pb, Ag
Under dev

VINDICATOR SILVER-LEAD MINING CO
Box 827, Wallace
Pres: W J Logus
Secy: M A Logus
Treas: H W Ingalls
VINDICATOR MINE, 2 mi E of Mullan
Arthur Lakes, engr

WARREN DREDGING CORP
Secy-treas: G T Eyman, Centerville
BULLOCK & GOLDEN ROD GROUP MINES, Idaho co, bucket dredge, Au, Ag

WASHINGTON MINING CO
Pres: John C Glahe
Mine at Burke, Ag, Pb, Zn
Mark Evans, gen mgr
Under dev

WESTERN METAL PRODUCTS CO
Wardner
Pres: W R Brainard
Mgr: R L Brainard
Mine near Murray, Eagle dist, Ag, Pb
Under dev

WHITEDELF MINING & DEV CO
416 Empire State Bldg, Spokane 8, Wash
Pres & purch agt: Compton I White Jr
Gen mgr: Compton I White Sr
VP: W W von Canon
WHITEDELF MINE on Clarks Fork, underground, Ag, Pb
Compton I White Jr, mine supt & mill supt
50-TON FLOT MILL

WHITE KNOB MINING CO
(U S Smelting, Refining & Mng Co) Newhouse Bldg, Salt Lake City, Utah
Pres: W C Page
Mine at Alder Creek, Mackay, Pb, Zn
In part worked by lessees under block lease arrangements

WICKSTROM, GEORGE
McCall
GOLDEN RULE MINE, 40 mi N of McCall, placer, Au, Ag
20,000-yds prod

WILBERT MINING CO
316 Kearns Bldg, Salt Lake City, Utah
Pres: Frank B Cook
VP-treas: R J Hogan
Secy: O C Larson
DAISY BLACK GROUP OF MINES, Dome dist, Howe, Pb, Ag
75-ton concentrator

WONDER LODE CLAIMS, INC
Box 756, Salmon
Pres & mgr: G Elmo Shoup
Gen mgr: Richard M Shoup
Dir: Wm R Shoup
Dir: F H Snook
WONDER LODE CLAIMS (12), IDAHO PRIDE GROUP CLAIMS (4), & BUFFALO LODE CLAIMS (5), underground & open-pit, Cu, Ag, Au, Columbite, Tantalite, Rare earths, Euxenite
Under dev

YANKEE MINES, INC
Sunbeam
Pres & gen mgr: Charles E Reamsnyder
VP: Howell J Layson
Secy: Troy Becker
Mgr & supt: A K Guard
LUCKY BOY, CUSTER & MULLEN GROUPS, Sunbeam, underground, Au, Ag
100-TON FLOT MILL

MONTANA

A1 CON MINING & ENGINEERING CO
Sheridan
Peterson Gulch, Upper Ruby Valley, Madison co, Ag, Cu
M R Massey, engr
Under dev

ALICE MINE
Summit Valley dist, Silver co
Operator: Remo Fantini, Walkerville
Owner: A C M Co
Ag, Pb, Zn

ALLEN, HARRY
Box 282, Townsend
SPAR MINE, Broadwater co, Ag

ALLIED METALS, INC
424 American Legion Bldg, Spokane, Wash
Pres: William Tanke
Gen mgr: J F Arnold
Dir: F L Carpenter
SYLVIA MINE, Couer D'Alene, BRENNER PLACERS, Wisdom, underground & placer, Au, Ag, Cu, Pb, Zn, Mn
M G Sprinsle, mine supt
A C Arnold, engr
300-yd dragline dredge prod Au
Under dev

ALPS MINING & MILLING CO
Box 1364, Missoula
Pres: H Herman Miller
Dir: Arthur L Reese
Audit: D V Bigbie
ALPS MINE in Harvey Creek mng dist in Granite co, hard rock & open-pit, Au
Leonard Beckman, mine supt
Harry Bouton, mill supt
Francis A Hancock, E M engr
Alfred B Newman, assy
Vernon Hoar, electrician
200-TON FLOT MILL
150-200-tons prod daily

AMAZON MINING CO
Box 372, Coeur D'Alene
Pres: A E Lunden
Secy-treas: Geo M Servick, Box 372
Secy-treas: Geo M Servick
Mine near Heron, Au, Ag, Cu
Joe Brooks, Noxon, Mont, agt
Under dev

AMBASSADOR MINES CORP
416 Empire State Bldg, Spokane, Wash
Pres & gen mgr: M J Unger, Santa Barbara, Calif
VP: Dale Lanphere, Spokane, Wash
Dir: John R Cross, Santa Barbara, Calif
Secy-treas: E I Fisher, Spokane, Wash
Dir: E W Sverdsten, Cataldo
AMBASSADOR MINE, 10 mi SW of Trout Creek, Box 82, Trout Creek, underground, Au, Ag, Pb, Cu
Under dev

AMERICAN GOLD CORP
Box 137, Pony
Pres: H E Boon, Weed, Calif
Dir: David Brihan
Dir: R P Sprouse
Gen mgr & purch agt: J F Kitching
BOSS TEED-CLIPPER & ALLIED GROUPS, Pony, Au, Ag
Under dev

AMERICAN MACHINE & METALS, INC
233 Broadway, Woolworth Bldg, New York City, N Y
Pres: John C Vanderpyl
Treas: H T McMeekin
TROUT MNG DIVISION
Trout, Coyle & Algonquin Group, Philipsburg, Mn
L B Manning, mgr & purch agt
Roy McLeod, mine supt
H A Murphy elec engr
Roy V Hamilton, mill supt
GRAVITY MILL
10,000-tons prod yearly

AMERICAN SMELTING & REFINING CO
(For officers, see Eastern listing)
(See also, Mike Horse Mng & Mlg Co)
JACK WAITE MINE, Sanders co, Pb, Zn
Mgr: J E Berg
EAST HELENA PL, East Helena
Custom lead smelter
Mgr: Kuno Doerr, Jr

ANACONDA COPPER MINING CO
25 Broadway, New York 4, N Y
OFFICERS
Ch of board: Cornelius F Kelley
Pres: W H Hoover
Exec VP: Robert E Dwyer
VP in chg mng operations: Clyde E Weed
VP in chg met operations: Frederick Laist
VP: Elbert D Sowerwine
VP: Francis U Case
Secy-treas: C Earle Moran
Comp: W Kenneth Daly
Asst VP: Richard S Newlin
Ch geol: V D Perry
MINING OPERATIONS AT BUTTE
VP in chg western operations: E S McGlone
Adm consultant: D M Kelly
Asst to VP: F A Linforth
Asst to VP: J H Dickey
Gen western counsel: R H Glover
Asst secy & secy to VP: J D Murphy
Asst secy & asst treas: K B Frazer
Properties include Mt Con, Belmont, Leonard, Steward, St Lawrence, Tramway, High Ore, Badger, Anselmo, Orphan Girl, Lexington, Alice, Emma, Travona, Flathead, Mayflower & Greater Butte Project Cu, Zn, Mn, Pb, Ag
A C Bigley, mgr of mines
E I Renouard, Jr, gen supt of mines
R H Sales, consulting geol
M H Gidel, asst ch geol, North America
C H Steel, chg geol dept, Butte
W A O'Kelly, ch mng engr
P K Ramsey, ch sampling dept
E H Burchardt, ch engr research
L F Bishop, asst research engr
R J Kennard, ch mech engr
F C Jaccard, mech supt
George Lilly, asst mech supt
J R Steck, elec supt
J L Boardman, ch Bureau of Safety
A E Richardson, ch ventilation engr
Eugene Hogan, labor comm
W F Coughlin, asst traffic mgr
W C Gallagher, ch assy
BELMONT, ST LAWRENCE & HIGH ORE MINES
T H Haas, asst gen supt
H Gillis, supt Belmont Mine
John Scott, fore High Ore Mine
EMMA, TRAVONA & ANSELMO MINES
W R Russert, asst gen supt
J Flynn, fore, Emma Mine
S Hurley, fore, Travona Mine
Vic Howard, supt, Anselmo Mine
LEONARD & TRAMWAY MINES & FILLING OPERATIONS FOR GREATER BUTTE PROJECT
H M Stroock, asst gen supt
Russell Powell, supt Leonard Mine
Wm Trudeau, fore, Tramway Mine
BADGER, ALICE & LEXINGTON MINES & GREATER BUTTE PROJECT
A R Sims, asst gen supt
Ray Ratliff, fore, Lexington Mine
John Killoy, fore, Badger Mine
MT CON, STEWART & ORPHAN GIRL MINES
C T Wise, asst gen supt
J Geach, fore Orphan Girl Mine
W E O'Leary, supt Mt Con Mine
PRECIPITATING PL
J F Ryan, fore
ANACONDA REDUCTION DEPT
W E Mitchell, mgr
F A Lemmon, asst mgr
E A Barnard, gen supt
L E Larsen, mech supt
F F Frick, research engr
C H Getchell, ch chemist
C T Hansen, supt of sampling
18,000 TON COPPER CONCENTRATOR
4,800 TON ZINC CONCENTRATOR
1,550 TON MANGANESE CONCENTRATOR
C F Milkwick, supt of concentration
F A Roeder, asst supt of concentration
T C Fisher, asst supt of concentration
R T McDonald, asst supt of concentration
COPPER SMELTER, 180,000 ton annual capacity
R J Maguire, supt of smelting
J H McCrea, asst supt of smelting
F A Salomonson, supt of Calcining
MANGANESE NODULIZING KILN 100,000 long tons annual capacity
F Cole, supt of Mn Kiln

4 ELECTRIC FERROMANGANESE FURNACES-2,400 long tons per month
J R Moore, supt of Ferromanganese Pl
ELECTROLYTIC ZINC REFINERY-72,000 tons annual capacity
W A Emanuel, supt of Electrolytic Zn Pl
C M Holstrom, supt of Zn Leaching
100,000 TON ANNUAL SUPER-PHOSPHATE PL WITH VANADIUM DEPT
M C Messner, supt of Contact Acid & Phosphate Pl
30 TON ARSENIC PL
CHAMBER ACID & BRICK PL
M R Hoyt, supt
GREAT FALLS REDUCTION WORKS-Great Falls
R B Caples, mgr
F S Weimer, gen supt
H E Satterthwaite, asst gen supt
E S Bardwell, technical consultant
J W Porter, mech supt
R J Lapee, met
FURNACE COPPER REFINERY, 180,000 tons annual capacity
ELECTROLYTIC COPPER REFINERY, 162,000 tons annual capacity
R H Miller, supt of Copper refineries
J F Smith, asst supt of Copper Refineries
ELECTROLYTIC ZINC REFINERY, 162,000 tons annual capacity
T K Graham, supt electrolytic zinc pl
D T Wever, asst supt electrolytic zinc pl
1 ELECTRIC FERROMANGANESE FURNACE, 540 long tons per month
M J Villeneuve, supt ferromanganese pl
SLAG FUMING PL, East Helena, 250,000 tons annual capacity
E M Baldwin, supt E Helena slag pl
R L Thompson, asst supt E Helena slag pl

ANDERSON BROS
Lewiston
BLUE DICK MINE, Warm Springs dist, Fergus co, Cu

ANDERSON PHOSPHATE MINES, INC
303 O'Rourke Estate Bldg, Box 322, Butte
Pres: William Anderson
Gen mgr: William Anderson Jr
Secy-treas: George D Anderson
MELROSE MINE, Phosphate
Henry P Johnson, engr

ANTONIOLI, PETER
SILVER PRINCE MINE, Granite co, Ag

AURORA MINING CO
228 Rialto Bldg, Butte
Partners: C Y Coleman & B M Johnson
Gen mgr: Don Keith
AURORA MINE, 3 mi NW of Basin, underground, Pb, Zn, Ag
Don Keith, mine fore
Under dev

BAILEY, R L
Wagner
GOLD, SILVER, WAR, BLACK EAGLE, CABIN, HIDDEN TREASURE & PILET QUACK LODES MINES, 40 mi SW of Malta, Au, Ag, Pb
Under dev

BARNES, O A
600 W Main, Helena
CADWELL PLACER, Lewis & Clark co, dragline dredge, Au

BATTLE BUTTE MINING CO
Polson
BATTLE BUTTE MINE, Flathead co, Zn

BELMONT MOUNTAIN GOLD MINING CO, INC
Principals, L K Hall, A L Anderson & O K Jardine

BENNETT MINING CO
Box 1135, Great Falls
Pres: Carroll R Bennett
Gen mgr & purch agt: F B Clarke
DACOTAH MINE, Neihart, underground, Zn, Pb, Ag, Au
PLOT MILL

BIG EIGHT MINE
Troy
Mgr: Ed McCaffery
Mine 6 mi from Troy, Zn, Pb, Ag
Under dev

BLACK & WHITE MNG CO
101 N Ave west, Missoula
Pres & gen mgr: R P Little
Dir: Margaret W Little
BROOKLYN MINE, Maxville, Ag, Pb, Zn
Lessee: Saranac Mng Co
Producing & under dev

BLUE BIRD MINE
Corbin, via Jefferson City
Owner: F A Bell
BLUE BIRD MINE, 4 mi W of Wickes, underground, Au, Ag, Cu, Pb
Under dev

BOAZ LEASING CO
Dillon (Partnership)
Trustee: Arthur J Theis
SHAFER BROS MINE, 21 mi N of Dillon, underground, Ag, Au
E W Stevens, consulting engr
Charlie Pritchet, mine supt
Under dev

BORN, H T
310 Radio Central Bldg, Spokane, Wash
MINE in Granite co, Pb, Zn, Ag
Under dev
(Leased from Saranac Mining Co, Maxville, Glen Hawe, mgr)
MILL

BRANDON GOLD FIELDS, INC
1216 Seward Ave, Spokane, Wash
Pres: Severne A Morford
Secy-treas: Jack Brandon
Mine 33 mi from Superior
Under dev

BRENNER, CHARLES
PLACER MINE on Colorado Creek, Horse Prairie dist, Beaverhead co, Au
Active

BULS MINING CO
1001 E Broadway, Missoula
Pres & gen mgr: C F Buls
Dir: Chuck Buls
Dir: Eric Jungus
ST LAWRANCE MINE, Saltese, underground, Ag, Cu
Under dev

BUTTE COPPER CONSOLIDATED MINES
505 Montana Standard Bldg, Butte
Pres: Carl J Trauerman
JO DANDY GROUP at Radersburg, Ag, Pb
Operated by lessees

BUTTE COPPER & ZINC CO
main office, 25 Broad St, New York, N Y
Pres: A A Shelare
VP: Miles F McDonald
Secy: John F Cole
EMMA MINE GROUP, 903 Lewisohn Bldg, Butte, underground, Mn, Zn, Pb, Au, Ag
Samuel Barker Jr, mine engr
25,000 tons prod monthly
Mine operated under joint working agreements with Anaconda Copper Mng Co

CALEDONIA SILVER-LEAD MINING CO
Kellogg, Idaho
Owners: H L DeKalb & G C Morton, Lewiston
MINE in S Moccasin Mts, 9 mi NW of Lewiston, Fergus co, Dickite-clay

CANUSCO, INC
Huson
Pres: R H Pooley, Victoria, B C
VP: R C Dempster
Secy-treas: K V Dempster, 458 NE Hazelfern Pl, Portland, Oregon
Mine at Huson, Au
Robert P Wells, mine supt
Dragline dredge, 3,000 cu yds daily
CARBONATE MINE, Whitehall dist, Jefferson co, Pb
Operator: Lester Lindquist, Whitehall

CANYON LODE MINING CO
425 Edith St, Missoula
Pres: R R Wallace
Dir: Earl Elstone
CABLE MINE, Cable Road, Anaconda, underground, placer, Au, Cu
Frank Metler, mill supt
W T Holser, engr
Elvier Oehrling, mech engr
100-TON FLOT MILL
Under dev

CARBONATE MINE
Whitehall dist, Pb
Operator: L Lindquist, Whitehall

CARBONATE MINES, INC
Marysville
Mgr: Morris Lawlor
BALD BUTTE MINE, underground near Marysville, Pb, Ag
Under dev
CARBONATE MINE, underground near Marysville, Pb, Ag
Under dev

CASTLE, HARRY
Winston
BELMONT MINE, Lewis & Clark co, Au

COEUR D'ALENE EXTENSION MINES, INC
Wallace
Pres: Perry J McKay
Gen mgr: R N Howton
VP: William Clark
Mine at Superior, Fluorspar
Mgr: James E Scott
Under dev

COLORADO MINE
Summit Valley dist, Ag
Owner: Anaconda Copper Mng Co
Operator: Nick Vujovich, 535 E Mercury, Butte

COMMONWEALTH LEAD MINING CO
424 Felt Bldg, Salt Lake City, Utah
Pres: J F Featherstone
Secy-treas: Dean R Featherstone
CALVIN MINE, Melrose, underground, Au, Ag, Pb, Zn
R E Marsell, engr
R J Hirst, Dillon, mine fore

CORNUCOPIA MINES CO
Virginia City
CORNUCOPIA MINE, Virginia City dist, underground, Au Ore
Mgr: Henry Shute

CRITCHFIELD, RAYMOND
White Hall
PARROTT MINE, 4 mi NE of Whitehall, underground, Au, Ag
Idle

CRUMB, RAY W
Avon
HUMDINGER MINE, Avon, underground, Au, Ag
4-TON GRAVITY MILL
Producing & under dev
(Being worked under lease-sales option by Jacob A Mehelich, A P Bonha, Wilbur Ogilvie & Paul Ogilvie, 1628 Chestnut St, Helena)

CUMBERLAND MINES
White Sulphur Springs (see Silverton Mines, Inc)
Owners: Russell & Clara Manger
CUMBERLAND MINE, Ag, Pb, Zn
Some prod, under dev

DALE, C O & SONS
Twin Bridges
POLLY JANE MINE, Madison co, Pb

DAVIS, RALPH E
1434 Commerce Bldg, Houston 2, Texas
Gold Placer property near Barton Gulch, Box C, Alder, dragline, hydraulic
Russell Unrue, mgr

DIADEM MINING CO
424 American Legion Bldg, Spokane 8, Wash
Pres & gen mgr: J F Arnold
Dir: Wm Tanke
DIADEM MINE, Wisdom, underground, Au, Ag Cu, Pb, Zn, Mn, Sb
A C Arnold, mine supt & engr
Under dev

DIXON COOPER CO
Ronan
Pres: Ed Broholm
Secy-treas: R T Maxwell
BLUE OX CLAIMS, 6 mi SW of Dixon, Au, Cu
Under dev

DOMESTIC MANGANESE & DEV CO
S Mont St, Butte
Pres & mgr: John H Cole
VP: H A Pumpelly
Secy: Katherine Cole Keith
Treas: Elizabeth Hane Cole
300-TON FLOT MILL with nodulizing pl for rhodocrosite

DOUGLAS PLACERS
420 Woodford St, Missoula
Owner: A R Douglas
PLACER MINE, in Confederate Gulch, near Townsend, Au
Under dev

EAST PACIFIC MINE
Winston
Owner: H Carver
Mine 6 mi SW of Winston, Ag, Pb, Zn, Au

ELDORADO MINING CO
333 Clark St or 304 Broadway, delena
Pres: G W Pollard
ELDORADO MINE, 12 mi N of Avon, underground, Cu, Au, Ag
30-TON FLOT MILL

ELKHORN MINING CO
Boulder Bank Building, Boulder
Pres & gen mgr: Wade V Lewis
VP: Walter B Smith
ELKHORN MINE, 18 mi NE of Boulder
FREE ENTERPRISE MINE, 1 mi NW of Boulder
FORTY-NINER MINE, Clancy
LAST CHANCE MINE, Armstead
Walter B Smith, mine fore
Mine engr: Wade V Lewis
Harold Giulio, mine shiftboss
Underground, Pb, Ag, Zn, Au, U
Forty-Niner & Last Chance Mines under dev
50-tons prod weekly

ELLISTON CONSOLIDATED MINING CO, INC
Elliston
LILLY GROUP MINES, 10½ mi S of Elliston, Au, Ag, Pb, Zn, Cu
Directors: L T & D E Newman, C L Helgren A B Pomel, V Frost & J Matson

EMMA MINE
(See Anaconda Copper Mng Co & Butte Copper & Zinc Co)

F M S MINING CO
Garnet
Dir: Glen W Faulkner, 240 N Higgins Ave, Box 1115, Missoula
Dir: H H Ormesher
Dir: G A Sutherland
MITCHELL-MUSSIGBROD DUMPS at Garnet, Au
MITCHELL-MUSSIGBROD MINE, Au, Under dev

FAITHFUL GOLD MINING CO
Dillon
Gen mgr & purch agt: D V Erwin
FAITHFUL GOLD, ALICE LEAD & BADGER GOLD MINES, Dillon, Ag, Au, Pb

FLINT, JAMES A & SONS
Bank Bldg, Pony
LOUISIANA, CHILE, ANY LOUISE & OTHERS undeveloped in Madison co, Au, Ag, W, Cu, Underground
Placer by dragline, bucket-dredge
TUNGSTEN GROUP, 12 mi S of Pony, underground, open-pit, W
GRAVITY MILL
Under dev

GARRISON MINING CO
Virginia City
Mgr: Rupert Garrison
GARRISON MINE, Madison co, Au
Under dev

GEYSER GYPSUM CO
Geyser
Directors: E E Storm, J L McKay & E C Martin

GIANT MILLING & DEVELOPMENT CO
Helena
Principals: B J Pugh, L E Dick & M M Martin

GIRDS CREEK VERMICULITE PRODUCTS CO
Box 369, Hamilton
Pres: Robert Chamberlain
Secy: E G Brownlee
VP: Cliff Jacobson
BITTER ROOT MINE, 11 mi E of Hamilton, Vermiculite
EXFOLIATION PL at Hamilton

GOLCONDA MINING CO, INC
15 Pittsburg Blk, Helena
Pres: M I Leydig
Secy: C P Whitcomb
Directors: H P Sandile, G Setzer & J Harrison
BUCKEYE GROUP MINE, 7 mi SE of Jefferson City, Jefferson co, Au, Ag, Pb
100-TON CYANIDE-CONCENTRATION MILL

GOLD HILL MINE
Whitehall
MARY INGABAR MINE (Gold Hill Group) in Gold Hill & Point of Rock dists, 3 mi SE of Whitehall, Au, Ag
Operator: Marcus D Pruett
20-TON GRAVITY MILL

GOLDEN ANCHOR MINING & MILLING CO
Spokane, Wash
Pres: F A Davis
VP: C F Davis
Secy: Helen Newmiller
Directors: L A Mycon, S S Blair & Henry Newmiller
EVENING STAR & BLACK JACK MINES near Elliston, Powell co, Au, Ag, Pb

GRANT-JOHNSON MINE
267 Second Ave NE, Kalispell
Mine in Hog Heaven dist, near Kalispell, Au, Ag, Cu
Lessees: Dan J Grant & A R Johnson from N P Ry Co
Under dev, bulldozer & tunnel operations

GREEN MOUNTAIN MINING CO
Dixon
Pres: C E Dragstedt
VP: H W Rock
Secy-treas & mgr: E F Elstone
Directors: A T Peterson & H [illegible]
GREEN MOUNTAIN MINE, 8e mi SW of [illegible] Sanders co, Cu, Au, Pt, Ag
50-TON FLOT MILL

GREENSTONE COPPER MINE
Box 421, Dillon, underground, [illegible] Au, Cu, W
Sponsored by Geo W Farlin, Grace [illegible] Kennedy, A R Ubigau & Capt Harry Kennedy, Seattle, Wash

H & H CO
Lewistown
Pres: Jack Hughes
PLACER MINE, testing in Yogo Gulch, Judith Basin, 50 mi W of Lewistown
Dragline operation

HARVEY MACHINE CO, INC
Pres: Leo M Harvey, Torrance, Calif
Directors: O K Bather, W R Price & J J O'Connor, Helena
ALUMINUM PROCESSING PL near Hungry Horse Dam
72,000-tons yearly capacity

HEADS & TAILS MINING, MILLING & LUMBER CO, INC
Butte
Owners: G G Dunn Jr, H R Lloyd, [illegible] Pomeroy, D A Kellogg & R G Dwyer

HI-RIDGE MINE
Twin Bridges
Owner: James C Roberts
Mine 6 mi E of Twin Bridges, Au, Ag
Charles Goodsell, Spokane, Wash, engr
James P Reed, mgr
Operation by Lessees

HUMDINGER MINE
Avon (see Ray W Crumb)

HUNT MINING CO, INC
Box 65, Laurin
Pres: M Z Hunt
Gen mgr: A E Hunt
Dir: B F Robbins
BINS, GOLD NUGGET, BULL RUN & CALIFORNIA GROUPS, Laurin, underground, open-pit, placer, Au, Ag, Pb
Toney Ravona, mine fore
Karl Caldwell, mill fore
Elbert Pack, mech engr
GRAVITY-FLOT MILL, 25 ton furnace

INTERNATIONAL MINERALS & CHEMICAL CORP
20 N Wacker Dr, Chicago 6, Illinois
Pres: Louis Ware
Exec VP: J P Margeson Jr
VP: M H Lockwood
VP & treas: R P Resch
VP: Franklin Farley
VP: A Norman Into
VP: Dr P D V Manning
VP: J R Bishop
Corp secy: E D McDougal Jr
Ch engr: T M Ware
Phosphate Mines at Drummond

INTERSTATE MFG CO
Bozeman
PROPERTY near Gallatin Gateway, Asbestos
Pres: C A Lester
Directors: M G Lester & E F Bunker

JANUARY MINING CO
414 Flowerree St, Helena
Pres-gen mgr: George G E Neill
JANUARY MINE, Winston, Au, Ag, Cu, Pb, Zn

JARDINE MINING CO
Jardine
VP & gen mgr: Gailen T Vandel
Purch agt: E L Conn
Underground-open-pit operation, Au, Ag
B F Omstott, mine supt
350-TON CYANIDE-FLOT MILL
300-tons prod

JUPITER MINING CO
Day Bldg, Box 1010, Wallace, Idaho
Pres: Henry L Day
Secy-treas: R W Anno
Mine near Saltese, underground, Pb, Ag, Cu
Under dev

KOOTENAY COPPER MINES, INC
Missoula
Owners: H C Fisher, R E Akins & E F Elstone

LAHEY, ED
Butte
OPEN PIT OPERATIONS, Alta, Jefferson co, Ag, Pb Ore

LARSON, GEO L
545 5th Ave, Helena
LARSON MINE, Lewis & Clark co, Ag

LEHMAN, WALTER
Box 780, Lewistown
SIR WALTER SCOTT MINE, 17 mi S of Stanford, open-pit, Ag, Pb, Cu, Zn
Mgr & purch agt: Walter Lehman
Under dev

LEXINGTON SILVER LEAD MINES, INC
1307 Old Natl Bank Bldg, Spokane 8, Wash
Pres: J A Allen
VP: W E Cullen, Sr
MINE at Neihart, underground, Au, Ag
C A Fay, mng engr
65-TON FLOT MILL

LIBBY GOLD CORP
Registered Office: Libby, Mont Business Office: 745 Peyton Bldg, Spokane, Wash
Pres: Dr J W Doughty
Secy-treas: R F Woodworth
Underground mine 4 mi SW of Libby, Au, Ag
Gareth Kenelty, mine supt
Under dev

LIBERTY MONTANA MINES CO
Jefferson Isl
Pres: Walter D Corrigan Sr
MAMMOTH MINE, S Boulder Creek, Madison co, Au, Ag, Cu
A J MacGregor, gen mgr
150-TON FLOT MILL
Idle

LINTON MINES
Missoula Hotel
Gen mgr: Thos J Linton
BLACKTAIL MINE, 4 mi N of Hwy 10, 25 mi E of Missoula, underground, open-pit, Pb
Dick Tunstill, mine fore
Walter Chandler, mill fore
500-ton prod daily from heavy-media mill

LOUIS PHILIPE MINE
Dillon, underground, Au, Ag, Pb
Owner: Ida B Hand
Mgr: John Hand
Bill Hand, engr
100-ton weekly prod

LUCKY HIT MINE
St Paul Gulch, Jefferson co
Cu, Pb, Zn
Owner: G W Wolfe, Whitehall
Under dev

M & S MINING CO, INC
Virginia City
MARIETTA & SNOWDRIFT CLAIMS, Virginia City Dist

MAGNA CHARTA MINE
Summit Valley dist, Silver Bow co, Ag
Operator: Michael Rakish, Walkerville

MANGER, RUSSELL & CLARA
White Sulphur Springs
Pres: Russell Manger
VP & gen mgr: Richard Manger
SNOW BANK, PORCUPINE M 80 & BOURBON MINES, underground, Au
10-TON GRAVITY MILL
Under dev, some prod

MARTIN MINING CO
Kalispell
Pres: Hans Tutvedt
VP: Ben Schlegel
Secy-treas: T R Flynn
MINE in Flathead co, underground, Ag, Pb, Cu, Zn
Waino Lindborn, supt
Under dev

MARIETTA MINES
Box 20, Townsend
Property 17 mi NW of Townsend in Park Mng dist, Au, Ag, Pb, Zn
Mgr: Al Dance
Harry Anders, mine supt
Producing & under dev

MASTER MINING CO
6323 Avondale Ave, Chicago, Ill
Pres: O L Rhoades
Mine at Gold Creek, Au
Mgr: John H McIntosh
Dragline dredge

McLAREN GOLD MINES CO, THE
Cooke, open-pit, Au, Ag, Cu
Pres: Owen B Jones
Gen mgr: Madden Nye
Henry E Graves, mill supt
C O Owens, mine fore
Charles T Delude, assy
200-TON FLOT MILL

McLEOD, W C
Box 588, Dillon
GOLDEN LEAF MINE, placer in Beaverhead co
Dragline & washing pl, Au

MERRILL MINE
Box 184, Libby, Au, Ag, Pb, Zn
Owner: Amzel Templin
20-TON FLOT MILL
Under dev

MIKE HORSE MINING & MILLING CO
Mike Horse
(Owned by A S & R)
Gen mgr: J E Berg, Wallace
MIKE HORSE MINE, 53 mi NW of Helena, underground, Pb, Zn, Ag, Cu
A E Haeseler, gen supt
N Thomson, mine supt
G W Moad, ch clk
Thomas Jancie & Byron Swartz, mine shift-bosses
Robert A Blake, mill supt
300-TON FLOT MILL
300-tons daily

MILLER, JACK, MINE
P O Box 339, Drummond, Au, Ag, Pb
Gen mgr: W A Noon
Edd Gladdieux, mine supt
Under dev

MINAH DEVELOPMENT CO
Butte
Partnership
Mgr: A E Nugent
MATSON & NORTH ALTA GROUPS, Jefferson co
Under dev

MINERAL KING MINING CO
1001 E Broadway, Missoula
Pres & gen mgr: C F Buls
Dir: Chuck Buls
Dir: John Shaw
Dir: E H Murray
Dir: Kirk Harris
MINERAL KING MINE, Saltese, underground, open-pit, Au, Ag, Pb, Zn, Fe
Ellstone, engr
Under dev

MINERVA MINE
Whitehall dist, Jefferson co
Operator: T Davenport, Whitehall
Au, Ag, Cu, Pb, Zn

MINING VENTURES CORP
MONTANA-TONOPAH PLACER MINE in S Boulder Dist, Granite co, Au
Incorporators: Earl T Ellis, Butte, A D McDermott, & R A Buzzard, Helena

MINMONT MINING CO
Box 812, Helena
Pres: G J Johnson
Dir & secy: Rodney H Kurth
Gen mgr: Herb Carver
EAST PACIFIC MINE, 5 mi W of Winston, Broadwater co, underground, Pb, Zn
(Owns Kleinschmidt Mine, operated by C L Hewitt, Helena)
Under dev with some prod

MITCHELL MINING CO
Union Bldg, Mt Vernon, Wash
Pres: E B Olmstead, 410 Main St, Mt Vernon, Wash
VP: L M Park
Secy-treas & Dir: Walter Hartwick
Directors: Claude Verrall, Herb Person, Bob Malloy, Ed Nelson & A C Pelland
MITCHELL MINE, 18 mi N of Butte, underground, Mn, Ag, Au
Mine mgrs & engrs: Hammond-Everly Engineering Co, 27 W Granite St, Butte
Morris Turner, fore
Wm O'Neill, hoistman

MOIRELLE, ARTHUR & JOSEPH FARROW
BOSTON GROUP, Timber Gulch, Basin Dist, Pb, Ag
Under dev

MONTANA CLAY INC
Townsend
Directors: M E Torly, M A Garthofner & G C Belts
MINE near Townsend, Clays, Gravels, Ore

MONTANA GRAPHITE, INC
Dillon
Gen mgr: Marvin F Riethoff
CRYSTAL GRAPHITE MINE, 13 mi SE of Dillon, Graphite
L W Robison, mgr
Doran Cunningham, assy
125-TON FLOT MILL
Under dev

MONTANA MINING & DEV CO
Bozeman
Operators: M Sinton, J R Anderson & C R Anderson
MINE in Bozeman dist, Gallatin co, Au

MONTANA PHOSPHATE PRODUCTS CO
Garrison
Pres: R B Shelledy
Supt: F E Burnet
ANDERSON MINE, 11 mi NW of Garrison
GRAVELEY MINE, 9 mi NW of Avon
LUKE MINE, 9 mi NW of Avon
Acct: E H Caldicott
J J McKay, asst mine supt
C Noon, engr
Wm Maquire, engr
C R McDonald, gen fore
Phosphate rock

MONTANA RAINBOW MINING CO
Marysville
Owner: W R Wade
Gen supt: John Brophy
DRUMLUMMON MINE, underground, Au, Ag
125-tons prod daily

MONTANA RESEARCH FOUNDATION
Box 85, Basin
Dir: John MacGinniss
Pres: Cleveland, Gov Hauser
SILVERSIDE & HELPER CLAIMS, Au, Ag, Pb, Zn
F L Craddock, mine supt
M H MacGinniss, engr
Don Wadelton, mech engr
Under dev

MONTANA SILVER STAR MINES, INC
Secy: Roy P Johnson, 403 Peyton Bldg, Spokane, Wash
MONTANA SILVER STAR MINE in Cedar Plains Dist, Zn

MORNING GLORY MINES, INC
1428 Old Natl Bank Bldg, Spokane, Wash
Pres: H F Tatt
Secy-treas: D R McKinney
KEYSTONE & HAYWIRE MINES, Troy, underground, Au, Ag, Pb, Zn
FLOT & CYANIDE MILL

MORROW, WILLIAM
Basin, (Operator)
HOLKBIND MINE, Galena Gulch, near Basin, Pb, Ag Ore

MOUNTAIN VIEW MINE
Boulder Dist, Granite co
Operator: Leon Heroux, Maxville

N & N MINING CO
Box 1068, Helena
Mgr: Alfred E Nugent
MEADOW MINE, 2 mi N of Clancy, underground, Ag, Pb, Zn
Henning Norgaard, mine supt

NANCY LEE MINES, INC
410 Main St, Kellogg, Idaho
Pres: Wendell R Brainard
VP: Lester E Harrison
Secy: Wayne A Brainard
Gen mgr: Frank Eichelberger
Gen supt & mine engr: C R Ranney
NANCY LEE GROUP, Superior
AMY, MATCHLESS & HUBBY ANDERSON GROUPS MINES, Pine Creek dist, Kellogg
Underground, Au, Ag, Cu, Pb, Zn
125-TON FLOT MILL
50-100 tons prod daily
Under dev

NETTIE MINE
Summit Valley, Ag
Operator: Lloyd Byrnie, 2522 Walnut, Butte
Owner: Anaconda Copper Mining Co

NORTH BUTTE MINING CO
101 W Granite St, Butte
Pres: J E Parker
VP: Daniel Coleman
VP: R L Svek
Directors: T W Roche, G N Short, G L Gow, C H Gallagher, L P Donovan & Harry Thompson
Secy-treas: J F McCarthy
Gen mgr: I E Serigstad
MINES in the Butte Dist, Au, Ag, Cu, Zn
C L Van Alstine, ch engr

NORTHWEST GOLD CORP
Whitehall
Owners: C L Thompson, R M Pruett & W H Myers
COLORADO MINE, 4 mi S of Whitehall, Au

OTIS WILLIAMS & CO
Box 1124, Helena
POORMAN & McCLELLAN CREEK PLACERS, Lewis & Clark co, Au, Ag
Dragline dredge

PARKMONT MINING CORP
1107 St Clair, Detroit, Michigan
HOMESTAKE MINE, Park co, Au, Ag, Cu, Pb

PERHAPS MINE
Whitehall dist, Jefferson co
Operator: Ed Rice, Whitehall
Au, Ag, Cu, Zn, Pb

PERRY & SCHROEDER MINING CO
26 W 8th Ave, Helena
Mgr-partner: Owen H Perry
Treas-partner: John W Schroeder
MISSOURI RIVER BARS PLACER, near Helena, Au, Ag, Saphires
5,000-ton bucket dredge
Archie Koppes, dredgemaster

PHOSPHATE & MINERAL DEV CO
Maxville
Owners: M A Hirt, C R Johnson & W E Ingersoll
MINE near Maxville, Granite co

PINE TREE MINE
Argenta dist, Beaverhead co
Operator: Harry Renz, Dillon
Au, Ag

PRINCETON MINING CO
Missoula
Pres: J W Abbott
VP: Tom Melsinger
Secy-treas: K W Dennie
PRINCETON GROUP, 5 mi E of Maxville, Granite co, Ag, Pb, Zn
Francis A Hancock, mng engr
100-TON FLOT MILL
Under dev

PROSPERITY MINES CO
Missoula
Owners: F A Wilson, M E Engdahl, A Labale, L P Jewell & F G Root

RAMSEY & STEEL
c/o M H Ramsey, Dillon
H & S MINE, Beaverhead co, Pb

REED, JIM
Twin Bridges
SHOEMAKER GROUP, 9 mi N of Twin Bridges
underground, Au, Pb
Operated under lease-sales option from Robert Fingerhut, Butte

REVENUE MINES DEV CO
Norris
Pres & mgr: R E Emery
VP: A H Emery
Secy treas: A M Welles
Directors: F Nevins & J S Wilson
REVENUE GROUP, 8 mi SW of Norris, Upper Hot Springs Mng Dist, Au
Idle

RIEBHOFF, MARVIN
Whitehall
GOLDEN SUNLIGHT, Jefferson co, Au, Ag

RUBY GULCH MINING CO
Zortman
VP: G Donaldson
Secy treas: M W Engle
Dir: V W Willett
Dir: L W Pilkey
Gen mgr: Edgar A Scholz
RUBY GULCH MINE, hardrock, open-pit, Au, Ag
Frank B Bryant, mgr
Max Klimper, mill supt
Hans Schroeder, mech & elec engr
300-TON CYANIDE PL
350-tons prod

RUBY SILVER MINE
Radersburg, Ag, Pb, Zn
Under option to R D Stewart
Operated by Lessees

SCOTCH BONNET MINING CO
Billings
Operators: R D Landis, C H Peterson, J L McGee, B F Stapleton & T E White
MINE OPERATIONS in Park co

SHAFER & RENZ
Box 832, Dillon
SHAFER GROUP, Argenta dist,Beaverhead co underground, Au
Partners: John H Shafer, Stanley Shafer Harry C Renz

SIGNAL MINING CO
Kellogg, Idaho
Pres: R E Brown
VP: G Nolan
Secy-treas: W R Brainard
Directors: L A McDougall & J Peabody
NEW YORK-MONTANA MINE, Bannack, underground, Au
Gunnar Johnson, mng engr
LEACHING & PRECIPITATION PL at Granite Mt Mine
Under dev. To produce 5,000,000 lbs Cu Annually

SILVER BULLION MINING CO
White Sulphur Springs
Owners: J Bettles, M Corkell, J Buckley H V Morelan
MINE in Meagher co, Ag

SILVERTON MINES, INC
W 907 Main, Spokane, Wash
Owners: Russell & Clara Manger
CUMBERLAND MINE, 8 mi NW of Lennep, underground, Pb, Ag, Zn
Under dev, some prod
F E Eddy, mng engr

SMITH, G E
Osburn, (Lessee)
NANCY LEE MINE, Superior, Pb
MILL

SOLUBLE PHOSPHATES, LTD
(an estate in joint tenancy), Box u, Maxville
Pres: Lee H Skeels
MAXVILLE PHOSPHATE MINE
50-TON MILL

STAR MINE & MILL
Neihart
Owner: Lewis B Stark
STAR MINE GROUP & GALT MINE GROUP, 4 mi N of P O in Neihart, underground, Pb Ag, Zn
50-TON FLOT MILL
40-ton mineral ore prod daily

SUNRISE MINES, INC
Basin
Pres: J Kogolshak
Secy: G R Childers
Treas: R A Wooster
Gen mgr: A C Bailetsky
EUREKA CLAIM at Basin, Au
J M Gill, supt
Under dev

SUPERIOR FLUORSPAR CO
Superior
Mgr: Frank Clark
FLUORSPAR CLAIMS (Formerly operated by Coeur d'Alene Ext Mines Co)
Under dev

SWANSEA MINES, INC
Box 504, Helena
Pres & gen mgr: C L Hewitt
SILVER BELL MINE, 40 mi NW of Helena, underground, Au, Ag, Cu, Pb
Omar Pullner, mine supt
100-TON FLOT MILL
100-ton prod

SYLVIA MINES
(A partnership) Box 321, Dillon
Mgr & purch agt: G M Fleming
SYLVIA MINE at Argenta, underground, Au, Ag, Pb
R M Fleming, mine supt
2-tons prod daily

TAYLOR-KNAPP CO
Box FF, Philipsburg
Pres: S R Knapp
VP & gen mgr: A V Taylor Jr
VP: Alf C Kremer
Gen supt: Donald G Johnson
MOONLIGHT GROUP, Philipsburg, underground, Mn, Ag, Zn
H H Nickelson, engr
C H Heistad, mine fore
G Kheale & J Wilson, mill fore
Charles P Knaebel, ch engr
F S Neal, assy
100-TON GRAVITY & MAGNETIC MILL
100-tons prod daily

TRI METALS, INC
Box 403, Philipsburg
Pres: Lester S Harrison
Secy-treas: Frank J Schultz
NORTH GRANITE GROUP, Au

TRI-STATE MINERALS CO
Box 327, Dillon
Home Office: Southern Calif, Minerals co, 320 S Mission Rd, Los Angeles 33, Calif
Owner: Walter K Skeoch
Div Mgr: John R Pyner
JACK DILLON MINE, 12 mi SE of Dillon, open-pit, Steatite Talc
Ernest Nygren, mine supt
Edward G Nettik, mine fore
250-tons prod weekly

TROUT MINING DIVISION
(See American Machine & Metals, Inc)

TURNER, RUFUS
Basin
GREY LEAD MINE, 10 mi NW of Basin, underground, Pb, Au, Ag, As
20-TON GRAVITY MILL
Under dev

UNITED MINES CO
Box 917, Butte
Pres: L R Dickason
VP: N Z Walker
Gen mgr: John T Stansfield
Secy-treas: W C Walker
Chas M Massey, geol
TOURMALINE & 96 other mines under dev, 15 mi NE of Boulder, open-pit, Au, Ag

U S GOLD CORP
Pres: E R Henderson
VP: A P Clark
VP: G Dilling
Secy-treas: A A Fannon
Directors: R Lester, D A R Hederman & A E Lovell
PROPERTY at head of Bear Gulch, Madison co, underground, Au
250-TON MILL

U S GRANT MINING CO
Virginia City
Pres & gen mgr: Walter H Myers
VP: William G Schmidt
U S GRANT, ALAMEDA-BAMBOO, CHIEF & EASTON-PACIFIC MINE, Virginia City, underground, Au, Ag
Ahti K Hanni, mine supt
12,000-tons crude ore prod yearly

UNITED STATES GYPSUM CO
300 W Adams St, Chicago 6, Ill
(For officers, see Calif listing)
UNDERGROUND GYPSUM MINE at Heath

VERMICULITE CO OF AMERICA
406 Thorpe Bldg, Minneapolis, Minn
Pres: Stanley Gray
Mine near Hamilton, Vermiculite

VICTOR CHEMICAL CO
Silver Bow, E M Meyers, Board of Trade Bldg, 141 W Jackson Blvd, Chicago 4, Illinois
Ch of Bd: August Kochs
MINE at Maiden Rock, underground, Phosphate rock
C G Derich, supt in chg of Mont operations
C H Hendrickson, prod supt
William Anderson Jr, supt in chg of mng operations
600-TON ELEMENTAL PHOSPHORUS PL, under construction at Silver Bow, Electric furnacing
OPERATIONS also in Fla, Tenn, Penn, Calif, and Illinois

VICTORIA MINES, INC
Sheridan
Pres: John T Potts, c/o Gallgher Co, Salt Lake City, Utah
Underground & open-pit mines, 2 mi W of Silver Star, Pb, Zn, Au, Ag
Walter Giebel, mill supt
150-TON FLOT MILL
125-tons prod daily

WRIGHT MINE
Barker dist
Operator: Thorson & Brazee, Monarch
Zn, Pb, Ag, Cu

YOGO SAPPHIRE MINING CORP
Lewistown
Directors: T P Sidwell, F G Huntington, H Brown, G Brundage & G L Sidwell

ZONOLITE COMPANY
135 S La Salle St, Chicago, Ill
Pres: A T Kearney
Ch of bd: Philip D Armour
1st VP: R C Shields
VP: J B Myers
VP & treas: W J Bein
Mine near Libby
Vermiculite Mica ore, Open cut
J B Myers, gen supt
Leo Franz, purch agt
400-TON MILL

NEVADA

ADDOR, GEORGE
Ruth
Owner: Kennecott Copper Corp
VETERAN GROUP MINE, Ag, Pb, Zn

AFFRANCHINO, ERNEST
Box 101, Eureka, Sb

AIRLINE GOLD COPPER MNG CO
Lovelock
Agent: E C Bradshaw
Mine 55 mi SE of Lovelock, underground, Au, Cu, Ag
Under dev

ALABAMA MINE
(See El Dorado)

AMES, ROY C
Ione
ALLIED MINES, 7 claims, open-pit, fluorspar
Idle

ANACONDA COPPER MINING CO
25 Broadway, New York 4, N Y
(For officers, see Montana listing)
VICTORIA MINE in Boone Springs dist, 70 mi N of Ely underground, Cu
Under dev

APEX MINE
Lessees: A A Stephens, M D Edwards & A E Grimstead
Mine 1 mi SE of Pioche, underground, Pb, Ag, Au

ARISTA GOLD MINING CO
Beatty
W H Callicott
ARISTA MINE, 10 mi S of Beatty, underground, Au
Under dev

ARMSTRONG, A R
Glendale
GRAND GULCH MINE, Clark co, Ag, Cu

AUSTIN-JUMBO MINING CO
120 Bridge St, Winnemucca
AUSTIN MINE, 45 mi NW of Winnemucca, open-pit, Au
A J Kirkman, mgr
MILL

AUSTIN SYNDICATE PROPERTY
Austin
Mine about 4 mi N of Austin in New York canyon dist, Au, Ag
O J Fundon, lessee
M B Moelliker, mgr
Under dev

BALDIN, HUGH M
Box 1232, Eureka
BALDWIN MINE, Eureka co, Pb, Ag, Zn

BARIUM PRODUCTS, LTD
Battle Mountain
Pres: M Y Seaton
Mgr: J B Perry
MOUND SPRINGS & VALLEY VIEW MINES, 26 mi S of Battle Mt, open pit, Ba
H J Tillis, mine supt
James Jury, mine fore
300-tons prod daily

BAROID SALES DIVISION
National Lead Co, 630 Ducommun St, Los Angeles, Calif
(For Officers, see Central listing)
ROSSI MINE, Battle Mt, open-pit, Barytes
R B Spitzer, supt

BASIC REFRACTORIES, INC
845 Hanna Bldg, Cleveland 15, Ohio
Pres: H P Kelis Jr
Mgr of operations: T W Ryan
Purch agt: C H Conour
Gen supt: N E Hanson
Asst Gen supt: H F Willard
GABBS MINE & PLANT, Gabbs, open-pit, Brucite, Magnesite
J Wren, mine supt
F V Dempsey, mill supt
250,000-tons prod yearly

BATTLE CREEK LEAD MINES
Box 637, Ely
GALENTE #2 MINE, 9 mi N of Ruby Valley, Pb, Ag

BATTLE CREEK TUNGSTEN MINE & MILL
Ruby Valley
Pres: N W Bowring
BATTLE CREEK TUNGSTEN MINE, open-pit
20-TON GRAVITY CONCENTRATOR
Under dev

BAXTER, J H
Box 652, Gabbs
VULTURE MINE, Churchill co, Au, Ag

BELLAND, MARTIN & BAKER
Baker
PAULINE CLAIM, White Pine co, Ag, Pb, Zn

BELMONT MINE & MILL CO
c/o D A Jennings, Box 1268, Ely
BELMONT MINE, 54 mi SE of Ely, underground, Pb, Ag

BENEDICT, H A & W W WALKER
Box 621, Babbitt
W B P CLAIM MINE, Mineral co, Pb, Ag

BENSON BROS, THOMAS BENSON, JR & MARVIN MAYES
Ely
GOLDEN ROD MINE, White Pine co Au, Ag, Pb
Under dev

BENTON & CORLETT
Salt Lake City, Utah; Ione, Nev
FARY MINE, Ellsworth via Austin, underground, Au, Ag
15-tons prod daily
Under dev

BIG CREEK MNG & MLG CO
Operator: Tony Romano, Austin
BRAY MINE, Sb

BIG DICK MINE
Owner: Dick Parker
Operator: Frank B Wheelwright, Box 158, Boulder City, Ag, Cu, Pb, Zn

BLACK DIABLO MINE
Lovelock, Mn

BLACK PRINCE MINING CO
Pioche
Pres: Mrs C B Wheeler
Secy-treas: Ed J Deck
Mine at Pioche, Mn, Au, Ag
Under dev

BLUE DIAMOND CORP
1650 S Alameda St, Los Angeles, Calif
Pres: N J Redmond
Gen mgr: W G Bradley
Operators mgr: J H Summers
Purch agt: B M Martz
BLUE DIAMOND MINE, Blue Diamond, open-pit, underground
H L Waldthausen Jr, wks mgr
M C Brooks, mine supt
600-tons gypsum & gypsum products daily
PLASTER MILL & BOARD PL, 600-ton daily capacity

BLUE STAR MINES, LTD
Box 34, Big Pine, Calif
REED TALC MINE, 20 mi W of Lida, underground, Talc
Under dev

BONANZA HILL MINES
Goodsprings
Partner: H C Kennedy
Partner: H S Woodward
ROOT ZINC MINE, Goodsprings, Ag, Pb, Zn

BOULDER INDUSTRIAL MINERALS CORP
Box 193, Beatty
LUCKY GROUP near Beatty, underground, Cu, Ag
Tom Beard, engr
Andy Seguro, fore

BOYCE BROS
Elko
ECHO CANYON MINE, Elko co, Ag, Pb

BRADSHAW, MARK G
Tonopah
WAR EAGLE MINE, underground, Au
100-TON CYANIDE MILL
Under dev
(Also see Endowment Mine)

BRISTOL SILVER MINES CO
216 Felt Bldg, Salt Lake City, Utah
Pres: Geo W Snyder
VP: H H Snyder
Gen mgr: J H Buehler
Mine at Bristol City, 25 mi N of Pioche
Au, Ag, Cu, Pb, Zn, Fe, Mn
E G Black, purch agt
Don Werner, mine supt

BROKEN HILLS MNG & MLG CO
Box 264, Babbitt
BROKEN HILLS MINE, Churchill co, Au, Ag

BROWN, FRANK
Fallon, (lessee)
Owner: Tom Kenyon Estate
SUNNYSIDE MINE, Mineral co, Au, Ag

BUCKEYE MINE
Virginia City
Owner: Leo K Johnson
Mine in Silver City dist, Au, Ag

BURT, DR C I
San Francisco, Calif
THE ILLINOIS MINES, 15 mi S of Eastgate, underground, Ag, Pb
Under dev

BUTTE MINE
Wadsworth
Owner: Oscar L Taylor
MINE in White Horse dist

BYRN'S BASIN MINES
Tuscarora, Sb

CALDART, SILVIA & ARNOLD WILLIAMS
Yerington
BI-METALLIC CLAIM MINE, Nye co, Ag, Au

CALDER, DR WALLACE
Winnemucca
WADLEY MINE, 15 mi SE of Mill City, underground, placer, Au, Ag
Dragline dredge

CALIFORNIA-NEVADA BARYTES MINES
766 50th Ave, Oakland 1, Calif
Pres: Dwight P Joyce, Cleveland, Ohio
Gen mgr: Edward L Ralston, Oakland
Purch agt: A A Gibeaut, Oakland
BARIUM KING at Battle Mt & JUMBO at Dunnpah, open-pit, Barytes
Roy C McDowell, mine fore
Seasonal prod

CALLICOTT, W H
c/o Arista Gold Mng Co, Beatty
ARISTA MINE, Nye co, Au, Ag

CALTO, JOHN
Imlay
RIVERVIEW MINE, Pershing co, Au, Ag

CASEY, LELAND
Mina
WHITE BUTTE MINE, Mineral co, Au, Ag

CASTLE MOUNTAIN MINING CO
c/o J H Alleman, Box 1229, Salt Lake City, Utah
Pres: Rowland H Merrill
VP: Burtis F Robbins
Secy-treas: J H Alleman
CASTLE MOUNTAIN MINE, Lander co, underground, Pb, Ag, Zn, Au, Cu
A J Cooley, mine & mill supt
Under dev

CENTRAL COMSTOCK MINES CORP
Box 339, Virginia City
Mgr: H B Chessher, Gazette Bldg, Reno
CHOLLAR, POTOSI, SAVAGE & HALE NORCROSS GROUP of MINES, Au, Ag
125-TON CYANIDE MILL

CHAMPION CITY MINES, INC
514 W Superior St, Duluth, Minn
Pres: Urop Kyto
Secy-treas: M Kyto
LUCKY BOY MINE, Hawthorne, Alum dist, Ag, Pb, Zn
250-TON FLOT PL
Under dev

CHANCE MINE
Cherry Creek
Lessee: John Boundy
Underground, W

CHARLESTON HILL NATIONAL MINES CO
Winnemucca
Pres: Mrs J P Clough
Lessees: Hollis E Chatwin & Reed H Richards
BLACK DIABLO PROPERTY, S of Golconda, Mn
450-600 tons Ore prod monthly

CHEROKEE MINING CO
Viola (via Caliente)
CHEROKEE MINE, Lincoln co, Ag, Cu, Pb

CHERRY CREEK TUNGSTEN MINING
Box Z, Cherry Creek
Pres & mgr: Kenneth Cleghorn
Secy-treas: Willard Cleghorn
Mine at Cherry Creek, W
W W Showalter, mill supt
50-TON FLOT PL

CHESCO MINING CO
333 Gazette Bldg, Box 889, Reno
Gen mgr: H B Chessher
JUNIATA MINE, Aurora via Hawthorne, Au, Ag
Hubert Chessher Jr, mine supt & engr
100-TON MILL

CHICK BED CO
Pernley
CHICK BED MINE, 22 mi E of Pernley, open-pit, Diatomaceous earth
Lowell Smith, supt

CHIMNEY MINES
Box 516, Lovelock
Owner & operator: Elmo G Burgess
CHIMNEY MINE, 35 mi NW of Lovelock, underground
Under dev
PHONOLITE MINE, 35 mi NW of Lovelock, underground
Under dev
5-TON CYANIDE MILL & 5-STAMP MILL

CIMARRON MINE
Mgr: E R Hinds, c/o Mizpah Hotel, Tonopah
Mine 30 mi N of Tonopah, underground, Au, Ag
Under dev

CIRAC, CHARLES C
Stillwater
SEVEN-E MINE, 40 mi NE of Fallon, underground, Fluorspar

CLARA MINE
Box 718, Ely
Owner: Korgan-Piscovich
Mine in Robinson dist

COMBINATION GROUP LODE MINES
Operator: Otto F Schwartz, Goodsprings
Ag, Pb

COMBINED METALS REDUCTION CO
219 Felt Bldg, Salt Lake City, P O Box 150, Utah
Pres & gen mgr: E H Snyder
VP: Wm Kelsey
VP & dir: Otto Herres
Treas: O F Burton
Purch agt: E G Black

NEVADA OPERATIONS, Pioche
C S Arentz, gen supt
W O Fizler, mill supt
R S Dure, mine supt
Paul Gemmill, geol
J M Ridges, pl engr
R H Godbe, perlite supt
E S McIntyre, mng engr
F H Anderson, ch clk
Robert Wigglesworth, ch chemist
Underground, surface quarry, Au, Ag, Pb, Zn, Mn, Perlite
1,000-TON SELECTIVE FLOT PL
400-TON PERLITE CRUSHING & SIZING PL

COMET MINE, INC
Pioche
COMET MINE, 25 mi W of Pioche, underground, Pb, Zn, Ag
David L Gemmill, mgr

COMMODORE MINE
Mina
Owners: Olsen, Cram & Taylor
Mine in Santa Fe dist

COMMONS, E R
Jungo
Owner: J S Austin
HAYSTACK MINE, Pershing co, Au, Ag

COMO CONSOLIDATED MINES CO
Lessees: Conway & Haddy, Silver City
COMO MINE, Lyon co, Au, Ag

CONSOLIDATED CHOLLAR GOULD & SAVAGE MINING CO
1122 Kohl Bldg, San Francisco 4, Calif
Pres: Sidney W Fish
Gen mgr: Thomas V Barton
VP & secy: S S Fish
Purch agt: Mines Engineering & Equipment Co
OVERMAN MINE, Gold Hill, open-pit, Au, Ag
F V Dempsey, mine supt
D T Powell, mill supt, fore
W G Reid, engr
Dick Ghiotti, pit fore
Geo A Gunderson, elec
J C Morrison, assy
CYANIDE MILL

CONSOLIDATED COPPERMINES CORP
120 Broadway, New York 5, N Y
Pres: Chester D Tripp
VP: Claude F Leaman
Secy-treas: C L Steegar
Gen mgr: A J O'Connor
NEVADA OPERATION, Kimberly
Open-pit, Cu, Au, Ag
H W Bishop, mine engr
John Eaby, ch clk
Thomas Filmour, master mech
John Godson, ch elec
John Hope Jr, ch geol
L Mathis, assy

CONSOLIDATED EUREKA MINING CO
Eureka
Pres: J E Hogle
Mgr: Wm Sharp
DIAMOND & EXCELSIOR MINES, Eureka
Under dev

CONSTANT, BENJAMIN I
Box 1607, Reno
GALENA HILL MINE, Washoe co, Au, Ag

CONSTANT MINERALS SEPARATION PROCESS, INC
Box 1607, Reno
Pres & gen mgr: Maurice Constant
VP: Harry C Howell
Secy-treas: Mary Smith
MONKOTA MINE, 6 mi S of Sulphur, open-pit
Sn, W, T, Hg, Au, Ga
Benjamin J Constant, mine supt
GRAVITY MILL, 100 yds hourly prod

CONWAY & KRAAI
Yerington, (owners)
VICTORIA MINE, Douglas co, Au, Ag

COPLEN & ASSOCIATES, WM H
Dixie Valley
MINE in Dixie Valley, gypsum, sulphur

COPPER CANYON MINING CO
Battle Mountain
Pres: L E Whicher
VP & gen mgr: Robert H Raring
COPPER CANYON MINE, Battle Mt, underground, Pb, Zn, Cu, Ag, Au
W E Williams, purch agt
E Snell, mine supt
Ralph Hayden, mill supt
Thomas M Cahill, engr
Ed Farley, elec engr
L C Johnson, assy
350-TON FLOT MILL

COPPER VALLEY MINE
Agent: W A Dewitt, 937 2nd Ave, Salt Lake City, Utah
Mine 94 mi NE of Ely, underground, Cu
Under dev

CORDERO MINING CO
57 Post St, San Francisco, Calif
VP: S H Williston
Gen mgr: J Eldon Gilbert
Adm asst: E B Pitcairn
CORDERO MINE, 13 mi SW of McDermitt, Hg
80-TON SMELTER

CORDES, SILAS
Milner Hotel, Boise, Idaho, Elko, Nev
BLUE JACKET MINE, 20 mi SW of Mt City, Au, Ag, Pb, Zn
Under dev

CORLETT, JAMES
Ione
LAXEY & FLORENCE MINES, Nye co, Au, Ag

CORNELIUS, L E
Mina
Owners: Leland, Casey & Sullivan
JASPER MINE, Mineral co, Ag, Cu

COULTER, W S
Battle Mt
COPPER QUEEN MINE, Lander co, Ag, Cu
DEAN MINE, Lander co, Ag, Pb

COWAN, T A
1127 Bridge St, Winnemucca
DUTCH FLAT MINE, 18 mi N of Golconda, placer, Au

CRAFTS, C E & LOWELL PETERSON
Hinckney, Utah
Mine in White Cloud dist, White Pine co, Ag, Pb

CROSS, DEANE L
Carson City
MARY ANN MINE, Nye co, Au, Ag

CROWELL, J IRVING, JR
Box 96, Beatty
FLUORSPAR MINE 5 mi E of Beatty, underground
50-TON GRAVITY-FLOT MILL
35-tons prod daily

CURIEUX, L & E BATEMAN
Tonopah
THE CATLIN MINE, Dawich Range, 50 mi SE of Tonopah, underground, Au, Ag
Under dev

D J WIEHER & ASSOCIATES
(Philadelphia, Pa) c/o R F Bibb, 826 S Third St, Las Vegas
Gen mgr: R F Bibb
SURPRISE & LUCKY DUTCHMAN GROUPS, Crescent, underground, Au, Ag, Fluorspar
Charles H Chandler, mine supt
Carl Hill, mine fore
H D Chandler, assy

DAKIN, FRED H
2811 Hillside Dr, Burlingame, Calif
CERVANTITE MINE, Lovelock, underground, Sb
Under dev

DAVIS, RUSSELL E
Battle Mountain
D & E PLACER MINE, Lander co, Au

DE LA MARE
Wadsworth
RENEGADE MINE, Washoe co, Au, Ag

DELAMAR EXPLORATION CO
Caliente
DELAMAR MINE, Lincoln co, Au, Ag, Cu

DE LAY, J M
Lovelock
AUBURN MINE, Pershing co, Au, Ag

DE LONGCHAMPS, F J
Box 2244, Reno
Owner: N Nenzel
TALAPOOSA MINE, 15 mi S of Fernley, underground, Au, Ag

DE ROUSSE, LOUIS
Mina
LONDON SILVER-LEAD MINE, Mineral co

DESERT MILLING CO
1230 E 109th St, Los Angeles 2, Calif
Mgr: Charles H Chandler, Searchlight
Partners: W W Hurtman & W F Ball Jr
H D Chandler, fore & assy
QUARTETTE MINE TAILINGS DUMPS & ORES, Au, Ag
100-TON CYANIDE MILL
100-tons prod daily

DODGE CONSTRUCTION CO
Fallon
Pres: E J Maupin
NATIONAL & HOLLYWOOD MINES, underground, Sb
GOLDEN QUEEN MINE, Esmeralda co, placer Au

DONNELL, CHARLIE
Box 331, Lovelock
COLORADO PLACER, 50 mi NW of Lovelock, Au, Ag
Dry wash pl

DONNELLY, L C
Sulfur
SAWTOOTH PLACER MINE, Humboldt co, Au

DOTY, W N
Goodsprings
NOON & ROOT MINES, Clark co, Ag, Pb

DOUBLE KING MINES, INC
Silver City
SILVER HILL MINE, Storey co, Au, Ag
DONOVAN MILL, Silver City
100-TON CYANIDATION-AMAL PL
DONOVAN MILL, Yerington

DRUMM, A D, JR
Fallon, Sb

DUNN, C G
Mountain City, (owner)
RIO TINTO MINE, Elko co, Ag, Cu

DUTCH FLAT MINING CO
Winnemucca
Pres & gen mgr: T A Cowan
VP: J B Hamon
Dir & metl: M G White
Underground & placer mines, 22 mi N of Winnemucca
Dragline

EAST HUMBOLDT MINES CO
Rileyville
HENRIETTA MINE, Pershing co, Au, Ag, Cu, Pb

EAST STANDARD MINING CO
Ernest R Woolley, c/o Hotel Utah, Salt Lake City, Utah
EAST STANDARD MINE, 55 mi SW of Ely, White Pine co, Pb, Ag

EGB MINE
Tonopah dist, Ag, Pb
Operator: Wm Wilson, Tonopah

EL DORADO GOLD MINES, LTD
Box 31, Winnemucca
Pres: O R Maunula
Gen mgr: Krand Wickham
Dir & mgr: E Morgan
Secy: Gus Rogers
Purch agt: Frank Wickham
EL DORADO (Alabama) MINE, 45 mi NE of Winnemucca, underground, Au
Scott J Putnam, supt
Alexander A Hutton, engr
CANE SPRING MILL

ELY GOLD MINING CO
Box 886, Ely
Pres: W G Goodman
Mgr, secy-treas: Wm J Walker
JENNY A MINE, White Pine co, Au, Ag

ELY VALLEY MINES, INC
Pioche
Gen mgr: John Janney
Supt: Pat English
ELY VALLEY & MENDHA MINES, Lincoln co, underground, Pb, Ag, Au
8,500-tons prod

EMERSON J HYDE
Manhattan
BLACKROCK MINE, Manhattan, underground, Au
Under dev

ENDOWMENT MINE
Box 311, Tonopah, Pb, Zn
Owner: B F Baker
Mgr & owner: Mark G Bradshaw
Under dev

ERRINGTON-THIEL MINING CO
Ruby Valley, Elko co
Partner: Mrs A T Errington
Partner: Oscar W Thiel
ERRINGTON-THIEL MINE, 65 mi S of Wells, underground, open-pit, Ruby Mica, Beryl
Under dev, some prod
HOLIDAY MINE, 50 mi S of Wells, underground, Cu
Under dev
GRAVITY-FLOT MILL

EUREKA CORP, LTD
Eureka
Pres: T Lindsley
VP & gen mgr: George W Mitchell
RICHMOND-EUREKA MINE, 2 mi W of Eureka, underground, Au, Ag, Pb, Zn
V Manz, mine supt
J Brozo, engr
E Melka, mine fore
Tom Kelley, master mech
A J O'Connell, accountant
E W Moede, gen surface fore
Under dev

EUREKA MINES, INC
Lessees: Conway & Haddy, Silver City
COMO MINE, Lyon co, Au, Ag

FARNSWORTHY-ELY COMBINED METAL MINES, INC
Box 1173, Ely
Pres & gen mgr: Fred A Farnsworth
WARD EXTENSION, SUNNYSIDE & ELY MAGMATIC, Hamilton, Au, Ag, Cu, Pb
Harvey Young, purch agt
F L Farnsworth, mine supt
F W Millard, engr
Under dev

FEHN & JOHNSON
Manhattan
DEMILLA, AJAX, JIM & CROWN PLACER claims, Nye co, Au

FINCH & McALLISTER
Gold Point
MINE 2 mi E of Gold Point, Au, under dev

FLETCHER MINING & MILLING CORP
Box 3, Manhattan
Pres: Roy W Fletcher
FLETCHER MINE, Au
Emerson J Hyde, purch agt & mine supt
Under dev

FRANCISCO, JOE
Manhattan, (owner)
JUMBO CLAIM MINE, Nye co, Au, Ag

FROST, CARL A
Victorville
Owner: Chris Juhl
FOURTH of JULY GROUP MINES, Nye co, Au, Ag

GABBS EXPLORATION CO
Gabbs
Co-owners: Lee D Dougan, Carvel Matson & J L Dougan
Pres: Lee D Dougan
MINE, N of Gabbs, underground, W
Under dev

GALENA MINE
White Cloud dist, Ag, Pb
Operator: W F Hanlon, Baker

GARDNER MINES
Box 413, Ely
NELLEY VIEW & MERRIMAR GROUPS, 20 mi SE of Ely, underground, open-pit, Au, Ag, Pb, Zn, Cu

GARRISON, ROY E
Wadsworth
MONARCH & TEXAS #3 CLAIMS MINES, Washoe co, Au, Ag

GEORGE, THOMAS
Beowawe
VIOLA MINE, 23 mi S of Beowawe, underground, Cu, Au, Ag

GERGEN & KARIDES
Box 1032, Eureka
CHAMPION GROUP MINES, Eureka co, Ag, Pb, Zn

GETCHELL MINE, INC
Box 2520, Reno
Pres: George Wingfield
VP & gen mgr: N H Getchell
Secy-treas: T L Willcox
Supt: R A Hardy
GETCHELL MINE, Red House, underground, open-pit, Au, W, As
PINSON-OGER LEASE, Red House, open-pit, Au, Ag
1500-TON CYANIDE & FLOT MILL

GIROUX, LOUIS D & ROLAND J
Supt: Matt Obert, Box 105, Mina
SAN MIGUEL MINES, MARIETTA MINES GROUP, 25 mi W of Mina, underground, Au, Ag
Under dev

GODWIN, TOM
Box 351, Lovelock
BLUE SKY MINE, Pershing co, Au, Ag
LIMERICK MINE, Pershing co, Au

GOLD LEDGE MINE
Eastgate
Owner: W X Schivies

GOLD METALS CONSOLIDATED MINES CO
Box 351, Tonopah
GOLD METALS MINE, Nye co, Au, Ag

GOLD POINT MINING SYNDICATE
c/o C L Richards, 140 N Virginia St, Reno
VP & dir: G E Mixson
Secy-treas & dir: C L Richards
Dir: Jas A Caughman
Dir: A B Jackson
Mine at Goldpoint, Au, Ag
50-75 TON CYANIDE MILL
Under dev

GOLDEN DAWN MINING & MILLING CO
Searchlight
Pres: Homer C Mills
Mgr: George C Davis
MORNING STAR MINES, Searchlight, underground, Au, Ag, Cu, Pb
1-car weekly prod

GOLDEN EMPIRE MINING CO
Searchlight
Pres: J Buren Evans
Purch agt: Wendell Romine
HERLAND MINE, Nelson (leased), underground, Pb, Zn, Cu, Ag
J J Dietrich, mine fore
25-TON FLOT MILL at Nelson

GOLDFIELD CONSOLIDATED MINES CO
Box 2520 or 206 N Virginia St, Reno
Pres: George Wingfield
Secy: George M Spradling
VP & gen mgr: E A Julian, Montgomery St, San Francisco, Calif

GOLDFIELD DEEP MINES CO OF NEVADA
Goldfield (see Newmont Mining Corp, Calif)
Pres: Martin Duffy
Dir: Elmer Burt
Mgr: Don Hargrove
Purch agt: T S Pay
WHITE ROCK, LAGUNA & FLORENCE MINES, Goldfield, underground, Au, Ag
E B Taylor, mine supt
W H Hisle, mill supt
C C Chamberlain, engr
J Mering, assy
100-TON FLOT MILL
100-tons prod daily

GOLDFIELD GREAT BEND, LTD
Rm 426, 15 E First St, Reno
Pres: Ben A Edwards
VP: H H Luce
Dir: E J Schrader
Dir: B A Edwards
Dir: H H Luce
Dir: H H Atkinson
Dir: C H Hall
GOLDFIELD GREAT BEND MINE, Goldfield, Au
Under dev

GOLD OF OPHIR PLACERS, INC
340 Main St, Lovelock
Pres: James J Chambers
PLACER MINE, 40 mi N of Lovelock, dragline dredge, Au
Under dev

GOUDEY HATFIELD
Box 529, Yerington
Owner: A C Sayre
Operating partners: Walter Cox & Jack Carpenter
JACK POT MINE, 8 mi SE of Wellington, underground, Pb, Zn, Ag, Au, Cu
Idle

GOURLEY, JAMES
Box 607, Winnemucca
Mine in Humboldt co, Au, Ag, Pb, Zn

GRAHAM DEV CORP
Ten Hundred Lincoln Road, Miami Beach 39, Florida
Pres: Charles R Graham
VP: Joseph S Graham
Secy & treas: Arthur H Seiler
GOLDEN EAGLE & GILDED AGE MINES, Box 727, 40 mi SE of Ely, underground, Au

GRAND DEPOSIT MINING CO
409 Ness Bldg, Salt Lake City 1, Utah
Pres & gen mgr: Paul C Lyon
GRAND DEPOSIT MINE, 25 mi NE of McGill, underground, Zn, Pb, Cu, Ag, Au
Paul C Lyon Jr, mine supt & engr
All mining by lessees
KANSAS COPPER MINE, 27 mi NE of McGill, underground, Cu, Ag, Au, Pb
Mine leased to Farnsworth Bros, Ely
10-tons prod daily

GRAY EAGLE MINE
Railroad dist, Elko co, Ag, Cu
Operator: H C Merrick, Palisade

GREAT AMERICAN MINING CORP
Eureka
Mine in Eureka co, Ag, Pb

GREAT LAKES CARBON CORP
18 E 48th St, New York City, N Y
Pres: George Eskel
Gen mgr: C A Frankenhoff
Asst gen mgr: E T Frankenhoff
Prod mgr: McKinley Stockton
DICALITE DIVISION, 756 S Broadway, Los Angeles 14, Calif
D F Dyramid, ch engr
PLANT #1, Basalt
Ralph Yokum, mill supt

GREENAN PLACERS
(J G Greenan) First Natl Bank Bldg, 20 N Virginia St, Reno
Mine at Battle Mt, Lander co
Bucket dredge
Leased to Natomas Co
300,000-yd monthly prod

GREY EAGLE DEV CO, INC
Beowawe
Pres & gen mgr: Fred Risley
VP: Ed Kirchenmann
Dir: Louie Cirac
Gen supt & geol: J P McGlynn
GREY EAGLE MINE, 35 mi from Beowawe, underground, Ag, Au, Pb, Zn
Under dev

GRITTON, WESLEY J & WILLIAM HOSKINGS
Rt 1, Box 541, Reno
SUNNYSLOPE MINE, 35 mi SE of Yerington, underground, Au

GROOM MINE
Box 68, Caliente
Lessee: Dan Sheahan
Open-pit Mine, 66 mi SW of Caliente, Pb, Ag
100-TON GRAVITY-FLOT MILL
25-tons prod daily

HALL & HOLLINGSWORTH
Box 105, Beatty
Partner: A Z Hall
CROWN POINT GLOBE MINE, Nye co, Au, Ag

HALLORAN, WILLIAM
Salt Lake City, Utah
HONDURAS GROUP MINES, Clark co, Ag, Pb

HAMBURG LEASE
Pioche
HAMBURG MINE, 8 mi W of Pioche, underground, Au, Ag, Pb
Idle

HAMILTON DEVELOPMENT CO
c/o J V Gaselli, Ely
MINE near Ely, underground, Ag
Under dev

HAMILTON, R K
Box 156, Goodsprings
KIRBY MINE, Clark co, Ag, Pb

HAMMOCK, CHARLES R
Mina, (owner)
HANDSCRABBLE MINE, Mineral co, Au, Ag

HAMMOCK, CHARLES R & C E EARL
Mina
Owner: Olympic Mng Co
OLYMPIC MINE, Mineral co, Au, Ag

HARRIS, D F, A F, & D M
Box 646, Tonopah
Partnership
KLONDYKE MINE, Esmeralda co, underground, Pb, Ag, Au
Under dev

HARRIS, HARRIS & LULL
Box 646, Tonopah
MORNING STAR #4 & KLONDYKE MINES, Nye co, Au, Ag, Pb

HAYWOOD MINE
Operator: McMillan & Clark, Silver City, Au, Ag

HAZEN & HARRIS
Box 128, Carson City
BLACK EAGLE MINE, near Valmy, Mn

HENEBERGH, JOHN
Box 152, Round Mountain
MINE near Round Mountain, U (Under dev)

HERLAND MINE
Nelson, Au, Ag, Pb, Zn
Owner: Joseph J Dietrich
Owner: Frank W Mead, 2425 Benevenue, Berkeley, Calif

HESS, FRED
Virginia City
PYRAMID MINE, Storey co, Au, Ag

HI-BAR CO
Box 90, Imlay
Pres & gen mgr: Blaine C Hoalst
IRON CANYON MINE, Gold placer
Carryall, bulldozer & 350-yd semi-portable wash pl
300-yds prod per 8-hr shift
WILLOW CREEK MINE, 13 mi S of Mill City, open-pit, Au

HICKS, J W & D H, & GEO MILLER
Schurz
RED GRANITE MINE, Mineral co, underground, Au, Ag
Under dev

HIDDEN CAVE MINING CO
1222 Crandall Ave, Ely
Pres & gen mgr: P Billeter
Dir: T L Irvine
Mine in White Pine co, Ag, Pb, Zn, Fe
Under dev

HIGH GRADE PRODUCTS CO
232 W First St, Reno
Pres: C J Catron
Secy-treas: W J Hancock
Open-pit operations on Bodie Creek
Pe-lite processing pl at Mason, Perlite Plaster Aggregate & Concrete Aggregate
Ted Park, pl supt
10-ton prod

HILL & CHIATOVICH
Gabbs
SAN RAFAEL MINE, 15 mi N of Gabbs, underground, Pb, Au, Ag
300-tons prod monthly

HOAGLAND, GEO E
Box 293, Winnemucca, Nv

HOLSTEN, JOHN G
Goodsprings
WHITE SPOT MINE, Clark co, Ag, Pb

HOOSIER CLAIM
Goodsprings
Owner: William T Frazer
Mine in Yellow Pine dist, Ag, Pb

HUBBARD, WALTER A
Mina
WILDCAT MINE, Mineral co, Au, Ag

HUDSON, ARTHUR
Box 11, Manhattan
STRAY DOG PLACER MINE, Nye co, Au, Ag

HUGHES, JOHN B & SONS
Box 376, Porterville, Calif
HUGHES GROUP MINES, Clark co

HUMBUG MINE
Wells
Operator: Eugene Parker
Operator: K Bollschweiger
Mine in Elko co near Black Forest, Pb, Ag
Under dev

HUMMEL, FRED E
Jungo
LAST CHANCE MINE, Humboldt co, Au

HUTCHINSON MINE
Wadsworth
Owner: Emile Cabanne
Mine in White Horse dist, Au, Ag

INDUSTRIAL MINERALS & CHEMICAL CO
6th & Gilman Sts, Berkeley, Calif
Pres & gen mgr: L R Moretti
JUPITER MINE, Wabuska, open-pit, Fullers earth, clay
Don Schueler, mine supt
Forest Rhoton, mill supt
200-tons prod monthly

IRON KING ROYALTY CO
IRON KING & IRON LADY CLAIMS in Jackson Dist, Humboldt co, Fe

IRON RAILROAD LEASE
Lessees: H S Thomas, Fallon & Roy S Blair, Lovelock
Mine 24 mi SE of Lovelock, open-pit, Fe

JACKSON MINE
Operator: Frank Bullock, Montello, Ag, Pb

JACOBSON, WALTER
1876 Osage St, Holliday, Utah
CELIA CHAMPION MINE, Eureka co, Ag, Pb, Zn

JOHNSON, GEORGE H
Box 558, Lovelock
C & H CLAIM MINE, Pershing co, Au, Ag

JOHNSON & HEIZER
Lovelock
LOVELOCK ANTIMONY MINE, Sb

KADOW, LEON C
318 Belmont Ave, Tonopah
Au, Ag, W, Prospect

KAPPLER CLAIMS
Lynn dist
Operator: Art Hansen, Carlin, Au, Ag

KEMPLE, G C
Goodsprings
WARDEN ROCK MINE, Clark co, Ag, Pb

KENNECOTT COPPER CORP
120 Broadway, New York City, N Y
(For officers see North Eastern listing)
NEVADA MINES DIVISION, McGill
J C Kinnear Jr, gen mgr
Paul Hett, asst gen mgr
W K Field, asst purch agt
Open-pit Mine, Ruth, Cu, Au, Ag, MoS
S W Smith, mine supt
R C Nispel, asst mine supt
K W Booker, ch engr
B A Gillan, ch clk
18,000-TON CONCENTRATOR WITH FLOT, Smelter two reverberatories, raw smelting, McGill
75,000,000 yearly Cu output
W K Sanders, mech & elec supt
L G Immonen, conc supt
Ed Pesout, smelting dept supt
W F Jones, constr supt
W K Field, asst purch agt
R W Crosser, division compt
NEVADA NORTHERN RY (subsidiary)
VP & gen mgr: H J Beem

KIDDER & KING
Beason Bldg, Salt Lake City, Utah
Partners: Edwin G Kidder & Vera S King
ONETHA, ORA, WEST ONETHA & MILWAUKEE patented lode claims, Hamilton, 40 mi W of Ely, White Pine co, underground, Pb, Ag, Zn, Cu
F P Hintze, geol
550 dry tons ore yearly output from Smelters
Under dev

KIRKENDALL & JACOBSON
Box 1049, Tonopah
Owner: Walter Bowler
FLORENCE MINE, Nye co

KNIGHT, RYAN & MORRIS
Mina
QUEEN MINE in Queen Canyon, underground, Pb

KNOWLES BROS
Elko
PROTECTION MINE, Elko co, Au, Ag, Cu, Pb
Owner: Walt Davidson

KNOWLES & MONTROSE CO and MONTROSE & MONTROSE CO
Mountain City
GARNET HILL TUNGSTEN & MONTROSE MINE, 22 mi E of Mt City, underground, open-pit & W
Under dev

KOGAN, FRANK P & WM F
Box 716, Ely
CUBA 1, 2, 3, 4, White Pine co, Ag, Pb, Zn

KOPENITE CO
Box 217, Caliente
Supt: C L Averett
KOPENITE MINE, 33 mi SW of Caliente, open-pit & underground, perlite

LAIRD, ABE
Kimberly
BAY STATE CLAIM MINE, White Pine co, Ag, Pb, Zn

LAMB, CLINN E
Oreana
ANNIE CLAIM MINE, Pershing co, Au, Ag

LARSEN, DAVID H
Box 302, Battle Mt
PITTSBURGH MINE, Lander co, Au, Ag

LAST CHANCE MINE
Aurum dist, Ag, Pb
Operator: Garrett Pierce, Box 259, Ely

LAST CHANCE MINING CO
Gabbs
Owner: John Poeter
LAST CHANCE MINE, 10 mi W of Ione, underground, Ag, Pb
Under dev

LAURITZEN OPERATIONS, LTD
Box 96, Tuscarora
Owner: A A Lauritzen
NORTH BELLE ISLE MINE, Au, Ag, Cu, Pb
10-TON FLOT MILL

LEAD-COPPER MINES
Elko
BULLION MINES, 28 mi SW of Elko, underground, Pb, Cu (Under dev)

LEWIS, IVAN & ANGELO RECK
Box 1111, Ely
SHERMAN DUMP MINE, White Pine co, Ag, Pb
ROCCO HOMESTAKE MINE, White Pine co, Ag, Pb, Zn

LINDSAY MINING CO
Box 150, Mina
GUNMETAL MILL, 24 mi SE of Mina, w MILL, under dev

LINKA, S H
Box 355, Austin
BI-METALLIC MINE, Nye co, Ag, Pb, Zn

LITTLE DICK MINE
Owner: Dick Parker
Operator: Frank B Wheelwright, Box 188, Boulder City, Ag, Cu, Pb, Zn

LOCKE, M E
Locke's via Tonopah
MOREY MINE in Morey dist, Nye co, underground, Au, Ag, Pb
Under dev

LONCAR, JOHN
Box 703, Tonopah
GOLD BAR MINE, Esmeralda co, Ag, Pb, Zn

THE LONDON EXTENSION MINING CO
Goldacres Operation, Beowawe
(Home office, 704 U S Natl Bank Bldg, Denver, Colo)
Pres: R W Fraser
Gen mgr: Harry C Bishop
Dir: H C Bishop Jr
Dir: R W Warmbrodt
GOLDACRES MINE, 30 mi S of Beowawe, open-pit, Au
R B Warmbrodt, mine supt
H C Bishop Jr, mill supt
450-TON CYANIDE MILL
3,000-tons waste & ore daily

LONG CANYON MINING CO, INC
Archie P Farr, 2784 Jefferson Ave, Ogden, Utah
Secy: Harry J Eldredge
KNOB HILL MINE, 14 mi E of Lee, underground, Pb, Ag
Under dev

LORANGER, W E
Silver City
Owner: St Joe Cons Mines Co
HAYWARD MINE, Lyon co, Au, Ag

LUCKY BOY MINE
(see Champion City Mines, Inc)

LUCY LEASE
Manhattan
Owner: F R Honson
Mine in Manhattan dist

LUTES, E J
Box 51-7, Hawthorne
AGNES D MINE, Mineral co, Au, Ag

M E D LEAD & SILVER MINING CO, INC
First Natl Bank Bldg, Salt Lake City, Utah
Pres: Pete Marthakis
Gen mgr: C A Elkins
VICTORY CLAIMS, Aurum mng dist, White Pine co, Au, Ag, Zn, Pb
Leased from O H Evans, 428 Coatsville Ave, Salt Lake City, Utah
Under dev

MALATESTA, GROUSEL & MOYLE
Hawthorne
LA PANTA EXT MINE, Mineral co, Au, Ag

MANGANESE, INC
Henderson
VP: Ray Golenor
THREE KIDS MINE (63 claims), Mn
Under dev
1200-TON MILL, under construction

MANHATTAN GOLD MINES CO
325 Texas St, Fairfield, Calif
Pres & dir: A R Coons
Gen mgr & dir: E L Dearborn
Dir: K I Jones
Mine at Manhattan, Au, Ag
R E Williamson mine fore

MARGARET EXTENSION MINE
Operator: E J Cleary, Box 54, Pernley
Au, Ag

MARKER, E F
Fallon
FOURTH of JULY MINE, Mineral co, Au, Ag, Cu, Pb

MARSHALL MINES
Jarbridge
Gen mgr: Wm N Marshall
J E MINE
STARLIGHT MINE
Lessee: A M Ross
ELKORO MINE
Lessee: John Williams
Underground, Au, Ag
25-TON GRAVITY-CYANIDE MILL

MARTIN, J J
Fallon
PYRAMID MINE, Churchill co, Au, Ag

MARTIN, OSCAR & JIM PAYNE
Jungo
COPPER QUEEN & RED BUTTE CLAIMS, 24 mi NW of Jungo, open-pit, Cu
Under dev

MARY ANN PLACER MINE
via Baker stage, Ely
Owner: R H States
Owner: H R States
Owner: Hazel Green
Mine 40 mi SE of Ely, Au, Ag
G E Placer machine

MARY ELLEN MINING CO
Hotel Nevada, Ely
Owner: Earnest R Woolley
PHYLLIS MINE, Hamilton dist, Pb, Ag

MAY DAY MINE
Orovada
Owner: Jay S Jones
Mine in Awakening dist

McFARLAND & HULLINGER
Montello
CLEVELAND MINE, 40 mi NE of Montello, underground, Pb, Au
DELNO MINE, 38 mi NE of Montello, underground, Cu
CORTEZ MINE, Eureka, Au, Ag
Owner: Cortez Metals Co, New York

McLANE, R M
Box D, Imlay
NATCHEZ MINE, Pershing co, Au, Ag

MIDGLEY, THOMAS III
Box 621, Lovelock
GREEN GOLD MINE, Pershing co, Au, Ag

MILAN, CHARLES E
Rawhide (via Fallon)
RAWHIDE PLACER MINE, Mineral co, Au

MILL CANYON MINE
Box 429, Elko
Owner: Joe McCarthy

MILL CREEK COPPER CO
Mountain City
Pres: Del E Smith, Logan, Utah
Gen mgr: Harry C Gorby, Fairfax
Supt: William N Gibb
Mine 5 mi SW of Mt City, underground, Cu
Under dev

MILLER, FRED
Manhattan
LUCKY STRIKE PLACER MINE, Nye co, Au

MILLER, JAMES & E M THAYER
Box 225, Ely
ANNIE MINE, White Pine co, Ag, Pb, Zn

MILLICK BROS
Baker Stage, via Ely
YORKSHIRE PLACER CLAIM MINE, White Pine co, Au

MINERS GOLD MINING CO
2189 McClellan St, Salt Lake City, Utah
John Borden, Chicago, Leslie T Barber & Burks White, Michagan
MINERS GOLD MINE, 2 mi NW of Midas, Au, Ag

MINERVA SCHEELITE MINING CO
Ely, W

MINK, J W
560 9th St, Elko
DIAMOND COPPER MINE, White Pine co, Cu
ROSEBUD MINE, Elko co, Ag, Pb, Zn

MONTEZUMA MINE
Box 666, Goldfield
Owner: Ed S Giles
New York & Eva (Montezuma) leased to Silver King Divide Mng Co
Ag, Pb
Fred A Vollmar, gen mgr, Silver Peak

MONTROSE, PRICE D
Box 98, Mountain City
RIO TINTO DUMP MINE, Elko co, Cu

MORE, JIMMIE D
Box 37, Sparks
BUTTE MINE, Washoe co, Au, Ag

MORRIS, R D
Battle Mountain
BETTY O'NEAL MINE, Lander co, Ag, Cu, Pb

MOUNTAIN VIEW MINE
Eureka
Owner: Sophie M Vaccarro
Mine in Lone Mt dist, Zn, Ag, Pb

MUTUAL VENTURES SYNDICATE
409 Ness Bldg, Salt Lake City 1, Utah
Pres & gen mgr: Paul C Lyon
GOLD NOTE MINE, Winnemucca, underground, Pb, Ag, Au, Zn, Cu
Paul C Lyon Jr, mine supt, engr, met, purch agt, geol
Idle

NABB, T
Searchlight
RED BIRD MINE near Searchlight, Au
Under dev

NAPP, I O
Box 267, Searchlight
BLACK BIRD & BLUE BIRD MINES & POMPEII GROUP, Clark co, Au

NATIONAL LEAD CO, TITANIUM DIVISION
111 Broadway, New York 6, N Y
(For officers, see eastern listing)
TITANIUM REFINERY at Henderson, under dev

NATOMAS COMPANY
607 Forum Bldg, Sacramento, Calif
Pres & gen mgr: R G Smith
Secy-treas: Wanda Durkee
16 mi SW of Battle Mt, Gold Placers held under lease from Greenan Placers, bucket-dredge
C E McKay, mine supt
Under dev

NEVADA CO, THE
5th & Alameda St, Reno
Pres: J G Phelphs Stokes
BERLIN MINE, Berlin, underground, Au, Ag
Under dev

NEVADA EQUITY MINING CO
Austin
Gen mgr: Robert H Raring
NEVADA EQUITY MINE, Au, Ag, Cu, Pb, Zn
Purch agt: Marion Escobar
Elmer Snell, mine supt
Under dev

NEVADA GOLD, INC & NEVADA GOLD MILL CO
c/o C L Richards, 140 N Virginia St, Reno
Pres & dir: Charles L Richards
VP & dir: A B Jackson
Secy-treas & dir: Tracy F Markwell
NEVADA GOLD MINE, Gold Point, via Goldfield, Au, Ag
50-TON CYANIDE PL
Idle

NEVADA-MASSACHUSETTS CO
Tungsten, via Mill City, Pershing co
Pres & gen mgr: Charles H Segerstrom Jr
Supt chg operations: W G Emminger
TUNGSTEN MINE, W
Eldridge Wash, mine fore
Phil McGuire, mill fore
400-TON MILL & CRUSHING PL

NEVADA METAL MINES CO
222 Atlas Bldg, Salt Lake City, U
Pres & gen mgr: H R Fisher
VP: Leon Fonnesbeck
Mine near Imlay, also near Ely, Au, Ag, Pb
Under dev

NEVADA METALS MINING CO
214 Boston Bldg, Salt Lake City 1, Utah
Pres & dir: Samuel A Walsh
VP & dir: Samuel V Walsh
Secy-treas & dir: Chris T Praggastis
Dir: Joseph L Parkinson
Dir: Max W Nisonger
MORNING STAR & DOTY MINES, Boone Spring
Ag, Cu, Pb, Zn, Fe
Samuel A Walsh, mine fore & engr
Under dev with some prod

NEVADA MINERAL REDUCTION CO
Box 74-S, Hawthorne
Owner: H H Holloway
LA PANTA & PAMLICO MINES, 12 mi S of Hawthorne, underground, Au
30-TON CYANIDE MILL
Idle

NEVADA MONARCH CONS MINES CORP
c/o H H Cazier, Wells
MONARCH MINE, Elko co, Ag, Pb, Zn, Cu

NEVADA PORPHYRY GOLD MINES, INC
Monadnock Bldg, San Francisco 5, Calif
Pres: Fred L Cole
PLACER MINE at Round Mt, Nye co, Au
Leased to Round Mt Gold Dredging Co, Balfour Bldg, 351 Calif St, San Francisco, Calif

NEVADA SCHEELITE, INC
11320 S Alameda St, Los Angeles 2, Calif or Box 979, Fallon
Pres: Philip Grey Smith
LEONARD MINE, 45 mi NE of Rawhide, underground, W
N A Clark, gen mgr
E M Colwell, supt
50-TON GRAVITY MILL

NEVADA SILICA SANDS, INC
Box 180, Overton
Gen mgr: F L Morledge
SILICA MINE & NEVADA SILICA SANDS MILL, Overton, open-pit
E V Hickman, gen supt
Walter Huntsman, mill supt
FLOT MILL
35-ton prod hourly
300-tons prod

NEVADA SUNSHINE SILVER MINES, INC
603 Beason Bldg, Salt Lake City, Utah
Pres: Philip C Reynolds
Geol: F F Hintze, Ph D
Secy-treas: E G Ridder
Assy: Beason & Nichols
NEVADA OPERATION, Ely
GRAND PRIZE MINE, Au, Cu, Pb, Zn
CONSOLIDATION of Monitor, ARRIS & GARDNER MINES, Taylor, open-pit & hard rock, Au, Ag, Cu, Pb, Zn
Sterling F May, mine supt
Alex E Potash, fore open-pit
100-tons prod daily

NEVADA URANIUM PRODUCTION CO
311 S Nevada St, Carson City
Pres: John C Kelly
VP: E M Kelly
Gen mgr: E R Hines
RAINBOW GROUP MINES, Round Mt, underground, U
John A Henebergh, mine supt
Under dev

NEW POTOSI MINE
(see G A Peterson)

NEW STRIKE MINE
Austin
Owner: Charles W Meyer
Mine in Kingston dist

NEWMONT MINING CORP
(See Goldfield Deep Mines Co of Nevada

NINETY-NINE MINE, INC
Goodsprings, Clark co
Pres & mine supt: A J Robbins
Mine at Goodsprings, Cu

NUNN COMPANY, THE
Box 133, Overton
Partnership
Mgr: Paul G Nunn
Open pit Mine, silica sand
L P Keller, supt
C L McCallum, engr
HYDRAULIC MILL
500-tons prod per 24 hr day

OHIO MINES CORP
76 E McMicken Ave, Cincinnati, Ohio
Pres & gen mgr: Dr Otto Dieckmann
OHIO MINE, Goldpoint, underground, Au, Ag
Elmer C O'Berg, mine supt
CYANIDE MILL
Under dev

OLD BARNEY'S GOLD MINES, INC
Searchlight
Pres: Harold M Morse
Gen mgr: Roy Williams
Treas: I G Napp
GOOD HOPE MINE, Au, Ag, Pb
Roy Williams, mine supt
50-100-TON FLOT MILL
Under dev
BLOSSOM MINE, Clark co, Au, Ag

OLD ENGLISH GOLD CORP
B W Center St, Provo, Utah
Pres & gen mgr: Joseph Hafen
VP: Carl J Harris
Purch Agt: Leon Newren
OLD ENGLISH MINE, Troy Canyon, via Tonopah, underground, Au
Jane Peterson, mine supt
50-TON FLOT MILL
Idle

O'LEARY PROPERTIES
Box 406, Winnemucca
Pres & mgr: Stanley F O'Leary
Dir: Margaret O'Leary
BUCKINGHAM MINE, Au, Ag, Pb
O'LEARY TUNGSTEN MINE, W, Au
Under dev

OLIVER, JOHN
2745 12th St, Sacramento, Calif
KEYSTONE MINE, Nye co, Au

ORNELAS & HOLLODAY
Tonopah
TONOPAH-BELMONT PROPERTY MINE, Nye co, Au, Ag

ORPHAN, CHRIST
Box 1209, Ely
GOOD LUCK CLAIM MINE, White Pine co, Ag, Cu, Pb, Zn

PACIFIC BUTTE MINES
c/o W B Naismith, Tonopah
MONTEZUME MINE, Esmeralda co, Au, Ag, Pb
EVA MINE, 35 mi S of Tonopah, underground, Pb, Ag, Au
NEW YORK MINE, 20 mi W of Goldfield, underground, Pb, Ag, Au
Mgr: Fred Vollmar

PAHRANAGAT LAKE MINING CO
Tom Beard, Box 1801, Las Vegas
ILLINOIS MINE, Lincoln co, Ag, Cu, Pb, Zn

PAINE, D F & SINTON
Ruth
HAYES MINE, White Pine co, Au, Ag, Cu, Pb

PANSY LEE MINING CO
Box 733, Winnemucca
PANSY LEE & W COAST MINES, 11 mi NW of Winnemucca, underground, Au, Ag, Pb

PARAFFINE COMPANIES INC, THE
Schumacher Gypsum Division, Box 1548, Henderson
WHITE EAGLE PIT MINE, 9 mi N of Henderson, open-pit, gypsum
MILL

PARSONS, WILLIS B
Box 743, Tungsten
MINE in Sonoma Range near Lovelock, Mn
Under dev

PATHFINDER
Manhattan
Pres: J L Sullivan
Gen mgr: D E Sullivan
PATHFINDER MINES, #1, 2, 3, 4, & 5, 14 mi W of Manhattan, underground, Au
Idle

PAYMASTER MINE
Battle Mountain
Owner: Paul C Christopher
Underground Mine, 16 mi SE of Battle Mt, Ag, Au, Pb
Idle

PEER, GALE G
Eastgate via Fallon
ORO PLATA MINE, Churchill co, Au, Ag

PEER & PEACOCK
Austin, (lessees)
Owner: Steve Linka, Box 335, Austin
GARNETTE MINE, Reese River dist, Austin, Lander co, W

PETERSON, G A
Box 190, Mina
Gen mgr & assy: G A Peterson
Co-owner: John Dewar (inactive)
NEW POTOSI MINE, 25 mi S of Mina, underground, Pb, Sb, Ag, Au
Harvey Hunter, mine supt
150-tons prod monthly

PETERSON MINING & MILLING CO
Austin, Lander co, Nv
Owners: W L Peterson & H R Fisher

PETERSON, R C & HELENE PRATER
Box 22, Gabbs
Owner: Helen Prater
LITTLE JIMMIE MINE, Mineral co, Ag, Cu

PHILLIPS, EDWARD H
Box 653, Broken Hills, via Fallon
ILLINOIS & LODE MINES GROUP, 12 mi N of Gabbs, Pb, Zn, Ag, Au
Under dev

PORTLAND MINE & LAUGHTON & CAUSTEN MILL
Box 114, Lovelock
Mine 25 mi N of Lovelock, underground, Au, Ag
Lessee: Earl Tucker

POSTON BROS
Kalispell, Montana
Placer ground in Rosebud dist of Northern Pershing co, Nev. Includes portion of Rosegold Placers, Inc. Au, W, Sn
Operators: R L Schneider & U L Poston

PRICE, J W & LEE SMITH
Wabuska
PAY DAY MINE, Lyon co, Au, Ag

PRIESTER, OSCAR
Tonopah
UNLUCKY CLAIM MINE, Nye co, Au, Ag

PRINCE CONSOLIDATED MINING CO
618 Kearns Bldg, Salt Lake City, Utah
Pres, gen mgr & dir: David L Gemmill
Purch agt: J B Whitehill
PRINCE MINE, Zn, Pb, Au, Ag
D F Jackson, mine supt
Paul Gemmill, engr & geol
S L Mahaffy, elec
2,500-tons prod monthly

QUINN, WEEKS, & ASSOCIATES
Box 55, Beatty
SENATOR STEWART MINE, Nye co, Au, Ag

RARE MINERALS MINING CO
Box 505, Sparks
Pres & gen mgr: J T Collins
Secy: F Steele
BALD EAGLE GYPSUM MINE, Clark co, open-pit, Gypsum
C Noble, mgr & engr
W C Kruger, mine supt & mech engr
300-tons prod

RAYMOND ELY WEST MINING CO
P O Box 837, Salt Lake City, Utah
RAYMOND ELY MINE at Pioche, Pb, Zn

RED HILL FLORENCE MINING CO
Goldfield
Pres & treas: Frank J Friday, Insurance & Mining
VP: H A Maschke, Mining
Secy: A Frank, Tonopah
Gen mgr & dir: Wm J Frank, Mng, Tonopah
Dir: George L Leboeuf, Mng, Los Angeles, Calif
FLORENCE MINE, RED KING CLAIM, WHITE ROCK & VICTORY MINES, Au, Ag

REGAN, JOHN
Mason
SANTA CRUZ & EMPIRE MINE, Mineral co, Ag, Pb, Zn

REORGANIZED SILVER KING DIVIDE MINING CO
Box 357, Austin
Supt: Burhl Dykhouse
THOMAS W GOLD BELT MINE, 34 mi NW of Austin, underground, Au, Ag, Pb
60-TON GRAVITY-FLOT MILL

REVILLE LEAD MINING CO
Box 172, E Ely, Nev
Pres & gen mgr: F Farnsworth
Dir: H M Johnson
Mgr: Wayne Cole
REVILLE LEAD MINE, W Reville, underground, Au, Ag, Pb, Zn
Purch agt: H W Young
W Cole, mine supt
Nelda Cole, asst mine supt
F W Millard & son, engrs
M Pray, assy
50-ton daily prod

REYNOLDS SAND & GRAVEL CO
Imlay
LAST CHANCE MINE, Pershing co, Au

RICE, JEFF & FRANK E WYCKOFF
Box 682, Winnemucca
RIO #1 & 2, Au, Ag

RICE, OWEN
Eureka
DOE RUN MINE, Eureka co, Ag, Pb

RIECK & NELSON
Battle Mountain
Pres: H R Rieck & Estate of A J Nelson
SILVER CHIEF GROUP, 8 mi NE of Battle Mt, underground, open-pit, Au, Ag, Pb
Under dev

RIP VAN WINKLE CONSOLIDATED MINING CO
Box 1650, Salt Lake City, Utah
RIP VAN WINKLE MINE, Elko, Au, Ag, Pb, Zn
125-TON FLOT MILL
Mine being worked under lease

ROARK, R L
Montello
ROARK MINE, Mineral co, Ag, Pb, Zn

ROARK, REX
Silverpeak
Owner: Rose Mng & Dev Co
COYOTE MINE, Esmeralda co, Au, Ag

ROBISON, SAM M
Box 1288, Ely
Gen mgr: Sam M Robinson
COLUMBIA MINE, 1 mi E of Ruth, underground, open-pit, Zn, Pb, Cu, Au, Ag, Mn
200-tons prod monthly

ROCHESTER CONSOLIDATED MINES CO
Lovelock, Box 521
ROCHESTER CONSOLIDATED MINES, underground, Au, Ag
H E Bohannon, mine supt
Lawrence B Wright, engr
Under dev

ROCKEWELL, H D, ESTATE
Tonopah
NORTH BUTTE CLAIM, Galena, 12 mi S of Battle Mt, underground, Au, Pb, Zn
Under dev

ROMANO, TONY
Austin
Gen mgr: Tony Romano
ANTIMONY MINE near Austin, Sb, Au, Ag

ROMERO, FRANK
Overland Hotel, Elko
TOP LEAD MINE, Elko co, Ag, Pb

ROOT ZINC LEASE
Box 156, Goodsprings
Gen mgr: R K Hamilton
Supt: L F Jacobson
BOSS MINE, PILGRIM MINE, ROOT MINE
Under dev
YELLOW PINE MINE, Ag, Pb
Roy Cross, engr
R H Reed, mine fore
75-TON GRAVITY MILL
O F Schwartz, mill fore
60-tons prod daily

ROSEN CRANS MANGANESE-TUNGSTEN MINE
Pioche
Pres: Urban Cole
Dir: James W Cole
Gen mgr: James G Hulse
DEMOCRACY MINE, 47 mi N of Pioche, Lincoln co, underground, Mn, W
James W Cole, met
Under dev

ROSS, A M
Jarbidge
STARLIGHT MINE, Elko co, Au, Ag

ROSS, L R & W R BOWMAN
Lovelock
Owner: Nevada Gold Mines Co
ROUGH LOCK & LOOK OUT FRACTIONS MINES, Pershing co, Au, Ag

ROUND MOUNTAIN GOLD DREDGING CORP
351 Calif St, San Francisco, Calif
Pres & dir: F C Van Deinse
VP & dir: William C Browning
VP & dir: Hugh Rose
Dir: Gerald Eaton
Dir: E J Gorman
Dir: Etheridge Walker
Dir: Edgar T Zook
Secy-treas: P C Knapp
20,000-ton daily (800-ton hourly) open-pit placer operation to conveyor system, to stationary gravity gold-wash pl, Round Mountain
Edwin H Oshier, gen field supt
Macy Meisenheimer, gen fore
Mort Pratt, met

RUBY, GEORGE E
Manhattan
JOHNNIE TOWN PLACER MINE, Nye co, Au

RUSSELL, ALLEN A
R R Mill Canyon, Beowawe
BERLIN TUNNEL MINE, Eureka co, Ag, Pb

RUTH ELDER MINING CO
Box 156, Searchlight
Owner: Willett Barton
RUTH ELDER MINE, 2 mi N of Searchlight, underground, Au, Ag
Under dev, some prod

ST LAWRENCE MINE
803 Wilder Bldg, Rochester, N Y
Pres: Mr Dinkey
Secy: Ellsworth Nichols
Underground Mine, 40 mi SE of Ely, Pb, Ag
Under lease & option to Shirley G Robinson, Ely: Victor Cottins & James G Hulse, Pioche
Under dev

SALT LAKE-PIOCHE MINING CO
306 Ness Bldg, Salt Lake City, Utah
Pres: N H Martin
APEX & FINANCIER MINES, Pioche, Au, Ag, Pb
A A Stephens, mgr & mine supt

SANDQUIST, E
Searchlight
SOUTHERN NEV & VICTORY CLAIMS MINES, Clark co, Au, Ag

SANFORD, M J
Lee
AMERICAN BEAUTY MINE, Ag, Pb

SAN FRANCISCO ENGINEERING & MINING CORP
801 Market St, San Francisco, Calif
Pres: John V Gargan
VP: E L Brown
Secy: F G Gibson
Treas: Herman Hornbein
ARGENTINE GROUP, LUCKY PENNY & MOHAWK MINES, in Silver Peak dist, underground, Ag, Pb (Under dev)
STATELINE MILL, 100-ton custom mill, Au
Clyde Barnes, supt

SCHAPPER, D S
Imlay
RIVERVIEW PLACER MINE, Pershing co, Au

SHULTZE CLAIM
Beowawe
Lessee: Frank McGill
SHULTZE MINE, 35 mi S of Beowawe, underground, Ag, Pb, Au, Zn
SMELTER
100-tons prod monthly

SCHWEISS, FRANK
Eastgate via Fallon
GOLD LEDGE GROUP MINES, Churchill co, Au, Ag

SEABISCUIT MINE
Box 34, Goodsprings
Lessee: Thos J Hammons
Mine in Yellow Pine dist, Pb, Zn

SEARCHLIGHT CONS MINING & MILLING CO
Las Vegas
WESTERN MINE, Clark co, Au, Ag

SEARCHLIGHT HOMESTAKE MINING CO
Box 65, Searchlight
QUARTETTE MINE, 1 mi S of Searchlight, underground, Au, Ag, Cu
Frank C Moore, Jr, supt

SEE, NEWTON A
COYOTE MINE, Humboldt co, Ag, Cu
Box 397, Winnemucca

SEGERSTROM & HEIZER
Lovelock
SEGERSTROM & HEIZER IRON MINES, open-pit, Fe
300-ton crushing & screening pl operated by Dodge Construction, Inc, Fallon

SELIG, A
Tonopah, Nv

SELIG, ANTHONY & ROBERT
Manhattan
SUNSHINE & GOLDEN FLEECE MINES, Nye co, Au, Ag

SELIGMAN LEAD-ZINC MINE
Owners: Pat Fraser & Sons, Box 186, Ely
Mgr: Pat Fraser
Mine 61 mi W of Ely, underground, Ag, Pb, Zn
Under dev

SHAW, CLARK C
662 Humboldt St, Fallon
CAMP TERRELL CLAIMS, Churchill co, Ag, Au, Pb

SHAW, LLOYD
662 Humboldt St, Fallon
ANGLO-SAXON MINE, Churchill co, Au, Ag

SHEAHAN, DAN
Caliente
(see Groom Mine)

SIERRA MAGNESITE CO
Newark, Calif
Pres: M Y Seaton, N Y
Dev mgr: J B Perry, Newark
SEGERSTROM MINE, Gabbs, Mn
H J Tillia, mine supt
Rae Swindlehurst, mine fore
100-tons prod daily

SIERRA TALC & CLAY CO
Box 658, Big Pine, Calif
Head Office: 5508 Randolph St, Los Angeles 22, Calif
Pres: Mrs Dodds
VP: E J Ellsworth
Gen mgr: Henry Mulryan
Gen supt: Don Kempter
OASES MINE, 55 mi SW of Goldfield, underground, Talc
F A Bachich, mine supt

SILVER BUTTE MINE
Currie
Lessee: Amos Epperson, 132 S 6th East, Salt Lake City 2, Utah
Mine 35 mi NW of Currie, underground, Pb, Ag
SILVER BUTTE MILL
Owner: Amos Epperson

SILVER, W A
Box 1108, Tonopah
EAST GOLDEN-OKE GROUP, Nye co, Au, Ag

SINGAYZE SYNDICATE
Wabuska
Open Pit Mine, Perlite
Mgr: R J Penrose
Under dev

SIRI, ANDREW & ALMA GUBLER
Box 532, Ely
Owners: Garaghan Estate Inc & Mrs S M Callahan
GREAT VALLEY MINE, 45 mi W of Ely, underground, Pb, Ag, Cu
Idle

SNO-LITE PRODUCTS CO
Box 58, Reno
Pres: C J Catron
PERLITE PLANT, Comstock Drive, Reno

SOUND STATE METALS, INC
Box 457, Reno
Pres: Joseph Hornstein
Gen mgr: Fred E Anderson
Dir: Anthony Gari
LONE PINE & COLUMBIA MINES, Mundy Pass via McGill, underground, Ag, Pb
Leonard Katz, engr

SOUTHWEST DREDGING CO
Box 535, Lovelock
SPRING VALLEY PLACER, Au
BONANZA PLACER MINE, Humboldt co, Au

SPEZZI, RAYMOND A
Mason
MASON VALLEY MINE, Lyon co, Cu

STANDARD SLAG CO
Box 3, Gabbs
Pres: L A Beeghly
VP: W E Bliss
Mgr: R O Jones
GREENSTONE MINE, 2 mi E of Gabbs, open-pit, Magnesite
F W Reimmiller, mine engr
100-tons prod daily
STOKES MINE, 8 mi NE of Gabbs, open-pit, Magnetite Ore
S Vernon Wines, met
Under dev

STEWART, H N
Cornell St, Big Pine, Calif
HIDEOUT MINE #1 (or Gates), 45 mi SE of Goldfield, open-pit, talc (under lease)

STOCKHOLM MINE
Contractor: O T Marks, Elite Motel, Ely
Mine 2 mi W of Hamilton, underground, Cu, Ag
Under dev

STRAND, WILLIAM
690 Wildes St, Fallon
RAWHIDE TUNGSTEN MINE, 26 mi NE of Rawhide, underground, W
Under dev

STREETER, O J
Box 485, Elko
SUMMIT VIEW MINE, Elko co, Ag, Pb

SUMMIT KING MINES, LTD
Box 632, Fallon
Pres: Ira B Joralemon
SUMMIT KING MINE, 31 mi E of Fallon, underground, Au, Ag
Percy G Dobson, gen mgr
Frank Kennicott, mine supt
70-TON CYANIDE MILL
R L Clawson, mill supt

JACK SUSMILL
Battle Mt
HUMBOLDT COPPER MINE, Humboldt co, Ag, Cu

SWANSON, H B
Hawthorne
THE LITTLE HILL MINE, Mineral co, Au, Ag

SWANSON, MERL
Mina
Owner: Harry McNamara
WARRIOR MINE, Nye co, 29 mi NE of Mina, underground, Au, Ag
FLOT-CYANIDE MILL

SWEEPSTAKES MINE
Railroad dist, Ag, Cu
Operator: Gregory Bros & R A Kenne, Elko

SWEETWATER MINING CO
Topaz, Mono co, Calif
Pres, mgr & purch agt: Edward Arends
SWEETWATER MINE, Risane Canyon, Douglas co, Au, Cu, W, Mo
Under dev

TANNER, B L
Box 37, Searchlight
SEARCHLIGHT INSULATION PRODUCTS MINE, 7 mi NW of Searchlight, open-pit, perlite
MILL

TENABO MINING & MILLING CO
Box 1186, Elko
Pres: Owen W Terry E M
VP & gen mgr: Lester B Walbridge
Dir: George A Collett
UTAH-VISTA GROUPS, Lander co, 30 mi SW of Beowawe, Ag, Pb, Zn, Cu, Ag
Producing
FLOT MILL, near Tenabo
Thomas J Lainey, mill supt

TEXAS #2 MINE
c/o Ray B Clemmons, Wadsworth, Au, Ag

THARP, LOWELL
Reno
MINE, Cu, under dev

THOMPSON, LOWELL
Box 1296, Eureka
PHILLIPSBURG MINE, Safford, Ag, Pb, Zn

TONOPAH DIVIDE MINING CO
426 First Natl Bank Bldg, 15 E First St, Reno
Pres: E L Cleveland
DIVIDE MINE, 6 mi S of Tonopah, underground, Au, Ag
Lessee: John Klaus, Box 553, Tonopah
Under dev

TONOPAH NORTH STAR TUNNEL & DEV CO
20 Runaway Ave, San Francisco, Calif
Owners: Gus Rogers, Winnemucca, & Mrs Margaret Geiger, Fresno, Calif
ANTELOPE SPRINGS MINE, Pershing co, Ag, Cu, Pb, Zn
J E Bottomley, supt

TRADER HORN MINE
c/o J V Grismer, Tonopah
TRADER HORN MINE, Tonopah, Au, Ag
Under dev

TREASE, A J
Box 264, Babbitt
Owners: Broken Hills Mng & Mlg Co
LITTLE BELMONT MINE, Mineral co, Ag

TUNGSTEN MINERALS, INC
Tungstonia, via McGill

TURK, FRANK
Box 161, Ruth
KING MINE, White Pine co, Ag, Pb, Zn

TURNER, DAVE
Mina
SUNSHINE #1 MINE, Mineral co, Au, Ag

TWILIGHT GOLD MINES, INC
163 N Virginia St, Reno
Gen mgr: Albert Silver
TWILIGHT GOLD MINE, 30 mi E of Fallon, underground, Au, Ag
George Frasher, fore
Under dev

TWIN BUTTES MINE
Lovelock, Au, Ag, Pb
E Heineke, Diamond drill exploration work
Under dev

UHAIDE, JOHN E & BENJAMIN PARKER
Box 384, Reno
ALADDIN MINE, Elko co, Ag, Pb, Zn

UNION LODE MINE
Box 22, Steamboat Springs
Owner: Union Lead Mng & Smelter Co
Pres: John H Somers
Mine in Galena dist, Pb, Zn, Ag, Au
100-tons prod

UNITED STATES GYPSUM CO
300 W Adams St, Chicago 6, Ill
(For officers, see Calif listing)
Open-pit Gypsum Mine at Gerlach

UNITED STATES LIME PRODUCTS CORP
1840 E 25th St, Los Angeles 11, Calif
Pres: W O Anderson
Exec VP: Kennedy Ellsworth
Res mgr: L N Grindell
Purch agt: E B Long
SLOAN PLANT, Sloan
Open face Mine, Dolomite
W O Brown, mine supt
W E Ellis, mill supt
APEX PL, Arrolime, (P O Sloan)
Open face mine, Limestone
W O Brown, mine supt

VALENTE, JOHN
Pioche
WOOD BUTCHER MINE, Lincoln co, underground, Au, Ag, Pb

VALLEY MINE
Operator: Morse & Graves, Las Vegas
Au, Ag

VALLEY SILVER LEAD CO
Box 24, Manhattan, Ag, Pb
Mgr: J R Mitchell

VALLEY VIEW MINING CO
Box 413, Ely
Pres: Fred C Horlacher
Gen mgr: C A Gardner
Dir: Alex Nibley
VALLEY VIEW MINE, underground, Au, Ag, Pb, Zn
5-tons prod daily

VITALLO CO
Sulphur
Owner: W S Peterson
STREETER MINE, ¼ mi E of Sulphur, open-pit, S
Philip A Hanson, mine fore
Harry R Scull, mill fore

VOGEL, EDWARD
Mina
MINE in Queen Canyon, underground, Pb

WAR EAGLE GROUP
Box 498, Tonopah
Owner: W A Flower
GOLD CLAIMS in Meadow Canyon, Belmont dist, 60 mi N of Tonopah, Under dev

WARD LEASING CO
1811 S 7th East St, Salt Lake City, Utah
Pres & gen mgr: L N Rasmussen
CHIEF CONSOLIDATED MINE, Hamilton, Mn
L J Price, mine supt
Frank Walthall, engr
H R Fisher, engr
Under dev

WARTIG, EDGAR
Denio
COPPER SHAFT MINE, Humboldt co, Ag, Cu

WESTERN DUKE MINE
Operator: J H Lightfoot, Box 724-6, Hawthorne, Au

WESTERN NEVADA COPPER MINE
Box 46, Mason, Cu, Au
Gen mgr: Leo Mason

WHITE CAPS GOLD MINING CO
Tonopah, Sb

WILLARD LEASING CO
Box 486, Ely
Mgr: Caesar Caviglia
WILLARD MINE, 4 mi E of Ruth, underground, Zn

WILSON, A C
Box 25, Silver City
MAY DAY MINE, Ormsby co, Ag, Pb

WILSON, JESSE R
Schurz
BUCKSKIN MINE, Douglas co, Au, Ag, Cu

WINNEMUCCA MOUNTAIN MINES CO
Box 31, Winnemucca
Pres: O R Manunla
VP: Fred Sims
Dir: Frank Saunders
Gen mgr & purch agt: Gus Rogers
REXALL & GOLD HILL MINES, underground, open-pit, Au, Ag, Cu
Elmon C Griffiths, mine supt
5-TON AMALGAMATION MILL
Harold Read, mill supt

WONDER MOUNTAIN MINES, INC
109 S Third St, Las Vegas
Pres & gen mgr: L G Blakemore
CAL-NEV WONDER 1, Box 54, Goodsprings, Au, Ag, Pb, Zn, under dev
L G Blakemore, mine supt & geol

YELLOW GOLD MINE
Beatty
Lessees: Robert Borneman, O E Walling & Wayne Hawkins
YELLOW GOLD MINE, 20 mi NE of Beatty, underground, Au

NEW MEXICO

AMERICAN SMELTING & REFINING CO
(For Officers see Northeastern listing)
SOUTHWESTERN DIVISION
813 Valley Natl Bldg, Tucson, Arizona
F V Richard, mgr
L H Chapman, asst mgr
L K Wilson, ch geol
GROUND HOG UNIT, Vanadium, New Mexico, underground, Pb, Zn
T A Snedden, supt
DEMING MLG UNIT, Deming
450-TON SELECTIVE FLOT PL
Treating Ground Hog & custom ore
T A Snedden, supt
H W Kaanta, mlg engr

ANITA MINE
Hidalgo co
Operator: Harrison & Walker, Lordsburg

ATWOOD COPPER MINES
(see Moseley, Ira L)

BANNER MINING CO
1910 First Natl Bldg, Okla City 2, Okla
Pres: H I Grimes
VP: E S Bowman
VP: Robert E Garnett
Secy-treas: W H Hardy
Asst secy-treas: Jessie Jackson

BONNEY-MANILA & MISER'S CHEST MINES
Lordsburg, Cu, Ag, Au
E S Bowman, gen supt
A B Bowman, supt Ariz properties
Coleman Dunkerson, mine fore
Geo Stone, mill fore
E E Bray, shop fore
E C Bowman, office mgr
F M Bowman, bkpr
Boyd W Venable, mine & safety engr
P F Stevens, ch elec
D M Reck, met
500-TON FLOT MILL
6,000-tons prod monthly
113 men employed

CONTINENTAL ENGINEERING CO
Box 56, Carrizozo
Pres & gen mgr: C E Degner Sr
VP: Jack Diamond
Dir: Benton W McGinnis
CONQUERON RIO TINTO MINE, Pb, Cu, Ag
SURPRISE PARK GOLD MINES, underground, Au, Ag, Cu
G E King, mine fore
Under dev
J Allen Payne, geol, cons engr & mine engr
C E Degner Sr, mine engr

CONTINENTAL POTASH CO
Kansas City, Mo
Pres: W M Cross, Jr
Mine 15 mi NE of Carlsbad, Potash

DENVER MINING & MILLING CO
Cerrillos
Gen mgr: Wilfred J Roberts
CASH ENTRY MINE near Cerrillos, underground, Pb, Zn

DONA ANA URANIUM MINING CO
Radium Springs
(For officers see Anaconda Lead & Silver Co, Colo)
Under dev

DRUNZER & CASNER
Box 244, Santa Rosa
Pres: Montgomery Drunzer
VP: R S Casner
Gen mgr: Quentin Drunzer
STAUBER MINE, 15 mi SW of Santa Rosa, open-pit, Siliceous Cu flux
M F Drunzer, mine engr
4 cars prod daily

DUVAL SULPHUR & POTASH CO
1120 Niels Esperson Bldg, Houston 2, Texas
(For officers, see South Central listing)
MINE 21 mi E of Carlsbad, underground, Potash
J R Smith, purch agt
W P Morris, gen supt
J E Tong, mine supt
FLOT MILL
Geo E Atwood, mill supt

ELAYER & CO
Silver City
Pres: C S Elayer
Gen mgr: W R Jenks
Dir: H V Kessey
LYNCHBURG-KELLY MINE at Magdalena, underground, Pb, Zn, Cu
100-tons prod daily

ELECTRA MINES, INC
Box 242, Hot Springs
Pres: Blanchard Hanson
VP: J P Flake
Secy: M E Conkling
IMPERIAL MINE, 6 mi S of Hot Springs, underground, Fluorspar, Pb
FLOT MILL
Idle

EL ORO MINE
Operators: E W Davis & A C Hibner, McIntosh

EMPIRE ZINC CO
(sub New Jersey Zinc Co) 160 Front St, New York 7, N Y
Pres: Henry Hardenbergh
Gen mgr mines: R L McCann
Purch agt: W J Lee
F J Maloit, gen supt
KELLY GROUP, leased by J E Torres, Magdalena
LYNCHBURG GROUP, leased by Elayer, Jenks, Kessey & Richmond, Magdalena
KINGSTON GROUP, leased by T B Everheart, Box 51, Socorro
HANOVER MINE, Hanover, Pb, Zn
S S Huyett, supt, Hanover
300-TON FLOT MILL

EXPLORATIONS, INC
Silver City, N Mex
ROYAL JOHN MINE, Grant co

FOSTER, L H & L H ROGERS
Duncan, Ariz
ALABAMA GROUP MINES, Grant co, New Mex

FULLER, MARVIN, & ASSOCIATES
Lordsburg
WALDO MINE, 2 mi S of Lordsburg, underground, Pb

GENERAL CHEMICAL DIVISION, ALLIED CHEMICAL & DYE CORP
40 Rector St, New York, N Y
Pres: H C C Ingraham
VP: M M Biddison
Dir mng operations: R H Dickson
Gen supt: Wilbert J Trepp, Box 226, Boulder, Colo
DEMING MINES, Box 631, Deming, Fluorspar
Lamont west, supt

GREAT LAKES CARBON CORP
18 E 48th St, New York, N Y
BUILDING PRODUCTS DIVISION
Gen mgr: T C Carter
Operating mgr: E J Mayhew
PERMALITE MINE, Socorro, open-pit, perlite
Carryall & dozer operation
Phillip LeBaron, mine & mill supt
1,000 tons prod daily

GREAT WESTERN MINING CO, MICA DIVISION
Box 903, Las Vegas
Pres & gen mgr: Rufus C Little
MINE at Mora, open-pit, pegmatites including mica
MILL at Mora
Prod: 60 tons mica daily

GREENLEAFE MINE
Gen mgr: H E McCray, 308 S Platinum St, Deming
Fluorspar

HAMMER & HOUSER
Organ
MEMPHIS KING MINE, underground, U
Under dev
H & H BERYL PROSPECT, 8 mi NE of Memphis
King, rare earths
Under dev

HOUSTON-THOMAS MINE
(see Mathis & Mathis)

HURLOW MINING & MILLING CO
Gen mgr & gen supt: J F Lower, Box 936, Bingham, New Mex
MILL, Hansonberg Mng Dist
MAJOR JONES MINE, Barite, fluorspar, Pb

INTERNATIONAL MINERALS & CHEMICAL CORP
20 N Wacker Drive, Chicago 6, Ill
(For Officers, see Mont listings)
POTASH MINES at Carlsbad
O T Harley, mgr
Nelson C White, asst mgr
J F Farrell, purch agt
W C Healy, industrial relations supt
H W Karchner, mine supt
B W Jacobs, mill supt
H L Gardner, mng engr
W F Ecklund, mine fore
G E Wiley, mine fore
E A Chowning mill fore
L H Bunnel, mech engr
A B Chatelz, pl engr

H F Clark Jr, met
J W McCroskey, elec
L E DuPont, chemist
5,000-tons Ore prod daily

IRVIN & BISHOP
San Antonio
MINES in Hansonberg dist, Barite
MILL 1 mi S of San Antonio, barite

KELLY MINE LEASE
Kelly, Magdalena, underground, Ag, Pb, Zn
Lessee: J D Torres

KENNECOTT COPPER CORP
120 Broadway, New York, N Y
(for officers, see eastern listing)
CHINO MINES DIVISION, Hurley
W H Goodrich, gen mgr
F C Green, asst gen mgr
SANTA RITA MINE, Santa Rita, open-pit, Cu
OSWALDO MINE, Santa Rita, Zn
G J Ballmer, supt of mines
W E Herkenhoff, asst mine supt
William Baltosser, mine engr
D G Thorne, gen maint fore
22,000-tons prod daily
CONCENTRATOR & SMELTER, Hurley
E A Schroer, mill supt
W J Axert, asst mill supt
E A Slover, smelter supt
W H Winn, asst smelter supt
Frank Brown, smelter gen fore
L H Fuller, ch engr power pl
E D Holman, asst ch engr, power pl
T J Hubbard, master mech
A L Burns, asst purch agt
B C Jacobs, met engr
B A Robbins, division compt
M E Morgan, designing engr

KIRK'S PERLITE INDUSTRIES
Box 576, Lordsburg
Owner: Marshall N Kirkendall
AMBER PEARL MINE, 12 mi S of Lordsburg, open-pit, Perlite

LAS CRUCES MARBEL & PHOSPHORUS CO
Las Cruces
(For officers see Anaconda Lead & Silver Co, Colo)
Under dev

LATHAM & CHENOWTH
Box 785, Hot Springs
Pres, gen mgr & purch agt: A H Latham
VP: R G Chenowth
SALINAS MINES, 55 mi from Hot Springs, underground, Pb, barite, fluorspar
Idle (Gov't proving ground)

LITTLE GIRL MINING CO
Hillsboro
Pres: J S Wade
Dir: W W Armstrong
Dir & mgr: E H Paxton
THE LITTLE GIRL & BLACK PEAK MINES, underground, placer, Au, Ag, Cu, Bi
5-TON GRAVITY MILL

LUCK MINING & CONSTRUCTION CO
Box 29, Silver City
Gen supt: J Hutchins
HOSTON HILL MINE, Grant co, open-pit, Fe, Mn

MacDONALD & DOBSON
Box 88, Magdalena
Gen mgr: J A MacDonald
Purch agt: W R Dobson
MITT MINE, 3 mi SE of Magdalena, underground, Zn, Cu, Pb, Ag
350-tons prod monthly

MALONE DARHASANA MINING CO
Box 203, Lordsburg
Pres: C Fridericksen
MALONE DARHASANA MINE, Grant co

MATHIS & MATHIS
Box 452, Silver City
Gen mgr: R W Mathis
Owner: Andrew H Stewart, Silver City
ATLAS #2 MINE, Grant co, underground
HOUSTON-THOMAS MINE, Grant co, underground, Zn, Pb, Ag, Cu
R W Mathis, geol
Adolfo Saiz, mine shiftboss
IRONHEAD IRON PIT, open-pit iron mine, Fierro
T O Garcia, mine fore

McCRAY, H E, PROPERTIES
Deming
MINE near Deming, underground, fluorspar
D E Flood, supt
VALLEY MINE near Deming, underground, fluorspar
Wayne Kemper, supt

McGHEE, DONALD & CO
Lordsburg
Gen mgr: Donald A McGhee
McGHEE MINE, 25 mi SW of Lordsburg, 4 mi S of Steins, underground, Pb, Zn, Ag, Cu, Au
75-TON FLOT MILL
Under dev

McGUIRE & ROGERS
Duncan
CARLISLE MINE, 16 mi E of Duncan, Pb, Zn, Ag, Au
125-TON FLOT MILL
60-tons prod daily

McLENDON, C T
Baynard
BEN HUR MINE, Grant co

MELVA GOLD MINES CO, INC
Gen mgr & gen supt: Nick Sapanas, Box 904, Socorro, New Mex
MELVA MINE, Au, Ag

MERRIMAC MINES
MERRIMAC MINE, 14 mi E of Las Cruces, Pb, Zn
Operators: J H Brown, Ira L & Wade Wright, Box 106, Organ

METALS LTD OF MILL CANYON
Box Y, Magdalena
Gen mgr & purch agt: Frank L Maher
H M METALS MINE, 12 mi SW of Magdalena, underground, Au, Ag, Cu, Pb, Zn
Seymour Thurmond Jr, geol
O L Maher, mill supt
15-TON FLOT-GRAVITY MILL
15-ton prod
Under dev

MEX-TEX MINING CO
San Antonio
MINES in Hansonberg, Pb, Barite
MILL, under construction, near San Antonio

MINA GRANDS MINES CO
Silver City
(For officers, see Anaconda Lead & Silver Co, Colo)
Under dev

MINERALS OPER, INC
c/o C J Vezzetti, Box 56, Hachita
HORNET MINE in Grant co

MOLYBDENUM CORP OF AMERICA
500 Fifth Ave, New York 18, N Y, also Questa, N M
Pres: Max Hirsch
MOLY MINE, 7 mi E of Questa, underground, Molybdenite
O R Whitaker, cons engr
J B Carman, gen mgr
Ben A Horner, mine supt
A L Gresalin, mill supt
200-TON FLOT MILL

MONTGOMERY, ARTHUR
Dixon
Owner-operator: Arthur Montgomery
HARDING MINE 5 mi E of Dixon, underground, open-pit, lepidolite, spodumene, beryl, microlite & columbite-tantalite
Plaudio Griego, mine supt

MONTGOMERY MINE
Sec 35, T25S, R21W
Owner: R A Custer, c/o Gen del, Lordsburg
Underground, Ag, Cu, Pb
Under dev

MOSELEY, IRA L
Lordsburg
ATWOOD COPPER MINE, 3 mi S of Lordsburg, underground, Au, Ag, Cu, Pb
1,000-tons prod monthly
DBA: Atwood Copper Mines

MUDRITE CHEMICALS
Box 590, Hatch
Owner: J W O'Brien
PALM PARK (3 claims) & HATCH EXTENSION, (2 claims), open-pit, Barite
Wayne Kemper, mine fore
Gravity operations

NEW JERSEY ZINC CO
160 Front St, New York City
Lessee: Douglas B White, Silver City
CLEVELAND MINE, Pinos Altos dist, Au, Ag, Cu, Pb, Zn

NEW MEXICO CONS MINING CO
(see Peru Mng Co)

NEW MEXICO MINING & CONTRACTING CO
Pres: C J Barnhisel
VP: John Wood
Secy-treas: H P Chapman, Jr
CONTRACT MINING at Harding Mine, lepidolite, open pit
Prod: 200 tons monthly

NIGHT HAWK
Engle, Au, Ag, Cu, Pb, Zn
Owners-operators: A H Latham & R G Chenoweth
Agt: c/o H M Latham, Engle

ONTARIO MINE
Box 105, Duncan
Owners: Billingsley Bros
Mine in Steeplerock dist of New Mexico, NE of Duncan, Ariz, Au, Ag, Pb, Cu
Benn Billingsley, 524 W Oregon Ave, Phoenix, Ariz & Bert L Forbis, 524 W Oregon Ave, Phoenix, Ariz, doing the dev work

OWEN, AL
Santa Rita
ROYAL JOHN MINE, 30 mi E of Silver City, Zn, Pb
Prod: 30 tons daily

OZARK-MAHONING CO
Box 449, Tulsa 1, Okla
Pres: Park Kelley
Purch agt: J L Cadden
FLUORSPAR MINES at Deming
Roy F Hickman, mines supt

PALOMAS CHIEF MINES
Box 97, Winston
Pres & gen mgr: Alvin W Emerick
PALOMAS CHIEF MINE at Winston, underground, Au, Ag, Cu, Pb, Zn
L E Fargo, cons engr
Edward B Armour, mine supt
A W Messee, asst mine supt
Under dev

PAPA, MRS SADIE
Magdalena
QUEEN GROUP MINES, Socorro co, N Mex

PERU MINING CO
Box 406, Silver City
Owner-operator: New Mexico Cons Mng Co, Box 406, Silver City
VP: Jos Taylor
Gen supt: J W Faust, Hanover
PE-ABIC GROUP, COPPER FLAT, KEARNEY GROUP, Central dist, Grant co, Au, Ag, Cu, Pb, Zn
1,000-TON CONCENTRATION-FLOT "DEMING MILL"

PERSHING MINE
1116½ Texas Ave or Box 1657, Lubbock
Owners: Dr & Mrs R S Pershing
Open-pit, Au, Ag
E W Furcella, mine fore
Under dev

PHELPS DODGE CORP
40 Wall St, New York 5, N Y
(For officers, see Phelps Dodge Corp, Ariz)
WESTERN OPERATIONS, gen office, Douglas, Ariz
BUNRO MT BRANCH, Tyrone, underground, Cu
John F Stock, supt
Copper Leaching operations

PINOS ALTOS MINING CO
Box 612, Silver City, underground, Au, Ag, Cu
Pres: Mrs L B Read
Gen mgr: Chas A Howe
Mgr: Loren F Read
John Pagetti, mine supt
100-TON FLOT MILL
Under dev

PORTALES MINING CO
205 NE State St, Portales
Gen mgr: Paul Ridings
PORTALES MINE, 5 mi S of Bingham, open-pit, Pb
R C Heath, mill fore
150-TON GRAVITY MILL, Socorro
150-tons prod daily

POTASH CO of AMERICA
Box 31, Carlsbad
Pres: G F Coope
VP & treas: F O Davis
P E Schreiner, office engr
E W Douglass, research dir
Mine 23 mi NE of Carlsbad, Potassium Chloride
F S Dunn, res mgr
R G Haworth, asst res mgr
C E Bothwell, purch agt
R R Knill, mine supt
A J Weinig Jr, refin supt
R R Dabney, pl engr
FLOT MILL

PROSSER, B E
Silver City
MINES in Pinos Altos dist, underground, Pb, Zn, Cu
Under dev

PUMICE CORP of AMERICA
Box 216, Grants
Pres: C E Clark
VP: Harold G Robinson
Gen mgr: J A Freeman Jr
PUMICE CORP OF AMERICA MINE, 8 mi NE of Grants, open-pit, Pumice
Johnny Matkovich, mine supt
Nolen E Neff, asst mine supt
Joe Hoisington, mill supt
Refugio Garcia, mill fore
2,000-tons prod monthly

Q B Q CO, INC
Box 246, White Oaks
Gen mgr: Donald J Queen
Gen supt: Forest J Queen
OLD ABE & NORTH HOMESTAKE MINES, Lincoln co, underground, Au, W

RED HILL MINING CO
Machita
RED HILL GROUP

ROCK PRODUCTS CO
Gen mgr: G E Tateman, Box 816, Socorro, NM
MINE at Socorro, Mn

ROYAL FLUSH MINING CO
c/o Tom Franklin, operator, Bingham
ROYAL FLUSH MINE, Au, Ag, Cu, Pb, Zn
Under dev

SAN MIGUEL MINE, MILLING & SMELTING CO, INC
Gen mgr & gen supt: G R Crager, Box 574, Las Vegas
SUNSHINE MINE, open-pit, Mica

SHATTUCK DENN MINING CORP
120 Broadway, New York 5, N Y
Pres: Thomas Bardon
Secy-treas: Norman E LaMond
ZUNI MLG CO (wholly owned subsidiary), Box 1304, Albuquerque, Fluorspar
George A Warner, mgr
Wm F Caley, ch clk
FLUORSPAR MINE near Grants
J H Mallery, mine supt
W W Fowler, met
FLUORSPAR MILL at Los Lunas
Coyne Hunt, mill supt
200-tons prod

SILVER DOLLAR MINE
Box 576, Lordsburg
Owner: Marshall N Kuykendall
SILVER DOLLAR MINE, 25 mi N of Lordsburg, underground, Au, Ag, Pb, W
Idle

SOCORRO CORP
Albuquerque
Pres: John Emmons
Mgr: G E Tatman
HUNTINGTON MINE, Socorro, underground, Mn

SOUTHWEST DEV CORP
Owner: Donald E Blackmar, Box 537, Silver City
LANGSTON MINE in Grant co

STILL BROS
c/o Don A Obell Still, Lordsburg
LAST CHANCE-MILLSITE MINE
50-TON MILL

STOCKBRIDGE, T J
Box 1033, Santa Rita
PATSY MINE, Grant co

STRONG & HARRIS
Vanadium
MILL SITE MINE, 2½ mi S of Lordsburg, underground

TAFOYA, FIDEL & DAVID
Magdalena
JUANITA MINE, Au, Ag, Cu, Pb, Zn

TERRY, H W
Monticello
MINE, 2 mi E of Monticello open pit, U
Under dev

THOMPSON, ROBERT P
Tyrone
MINE near Tyrone, fluorspar
Under dev

TONOPAH DIVIDE MINING CO
Box 1564, Reno
VP: L V Skinner
Secy-treas: R M Erickson
DIVIDE MINE, 6 mi S of Tonopah
Idle

TORPEDO MINING CO
Organ
Pres: A S Putney Jr
VP: L B Bentley
Secy: Edwin Hecham, Las Cruces
TORPEDO, MEMPHIS & STEPHENSON-BENNETT MINES, underground, Ag, Cu, Pb
J H Brown, mine supt & gen mgr
L B Bentley, assay
Under dev

TRI-BULLION CORP
Pres: S F Dominick
Lessee: Mine & Metals Co
Nitt Properties
McDOWALD & DOBSON, Magdalena, Au, Ag, Cu, Pb, Zn

UNITED MINING & MILLING CORP
Box C, Socorro
Pres & gen mgr: Morgan C Huntington
BLACK HILL MINES, open-pit, Mn
George Carson, mill supt
Modesto Del Castillo, engr
GRAVITY MILL
Under dev

UNITED STATES POTASH CO
30 Rockefeller Plaza, New York
Pres & gen mgr: Horace M Albright
VP & gen counsel: Paul Speer
VP: Thomas M Cramer
Secy-treas: Walter F Dingley
Asst secy: Gertrude B Stiebler
VP, sales: James E Barnes
Dir: J Frederick Cornell
Dir: Harrison E McCann
Dir: George R Showden Jr
Dir: Harry L Palmer, Skowhegan
Dir: Theresa N McSweeney, Atlantic N J
MINE & REFINERY at Carlsbad, Pot
Henry H Bruhn, res mgr
L Hollister Jones, Ind rel dir
Frank B Van Horn, land agt

UNITED STATES SMELTING REFINING & MINING CO
Box 2137, 75 Federal St, Boston
Pres: F S Mylock
VP & gen mgr western operations: A P Page, Box 1880, Salt Lake City, Utah
Mgr West Mines: A G Kirkland
Asst to mgr west mines: B E Grant
BAYARD MINE, Box 698, Bayard, Pa
J T Lewis Jr, mgr
Elton Clark Jr, asst mine supt
Paris V Brough, mill supt
450-TON FLOT MILL

VANADIUM CORP OF AMERICA
420 Lexington Ave, New York 17, N Y
(For officers, see Colorado listing)
EAST NEW MEXICO MINE, San Juan co

WHITE, DOUGLAS B
Box 601, Silver City
Gen mgr: Douglas B White
ZUMIGA MINES, 4 mi W of Fierro, underground, Cu
Glenn R Harsh, met
LEACHING PL

WHITE EAGLE MINING CO
Gen mgr: J H Harrison, Deming, New Mex
WHITE EAGLE MINE, fluorspar

ZUNI MILLING CO
Korber Bldg, Albuquerque (Wholly-owned subsidiary of Shattuck Denn Mng Corp, Ariz)
ZUNI MINE, Grants
200-TON MILL, Los Lunas
Fluorspar
G A Warner, mgr
Wm F Caley, ch clk

OREGON

AFTERTHOUGHT CLAIMS
c/o R A Rockne, Rt 7, Eagleson Road, Boise, Idaho
Pb, Ag
Under dev

ALLEN, FRANK
BADGER GROUP MINES, Busanville, Grant co, Au, Ag, Pb, Zn

AL SARENA MINING CO
Trail
BUZZARD MINE, Au, Pb, Zn

ALCOA MINING CO
Box 199, Hillsboro
(For officers, see South Central listing)
BAUXITE DEPOSITS in Columbia & Washington co
E A Messer, resident engr
Under dev

AMIDON, R G & CO, INC
Granite
Pres, gen mgr & supt: A McHugh
BUFFALO & TILLICUM MINES, underground, Au, Ag, Cu, Pb, Zn
FLOT MILL
S J Giulio, mill supt

ANACONDA MINE
Grants Pass, Au
Under dev

ANDERSON, EDWARD, R B HALL & ARCHIE FARNSWORTH
Medford
CHERRY GULCH MINE, near Denio, Au

ARGONAUT MINE
Baker
ARGONAUT MINE, Au
Under dev

ARTHUR, JOHN
Baker, (lessee)
CHLORIDE MINE, Rock Creek dist, Baker co, Au, Ag

ASHLAND MINE
Van Curler, Dewey & Fred, 835 N Main St, Ashland
ASHLAND MINE, 1½ mi NW of Ashland, underground, open-pit, W, Au
50-TON GRAVITY MILL
20-40 ton prod daily

ASSOCIATED METALS, INC
611 America Bldg, Seattle 4, Wash
Pres: Ira Mahon

AUSTIN, D D
Rt 1, Box 616, Cave Junction
BAILEY MINE, 4 mi E of O'Brien, placer, dragline, Au, Pt

B R & C MINING CO
Box 511, Jacksonville
Operators: W A Campbell, A E Reinking & J D Bowdish
Mine on Sterling Creek, dragline, Au
Floating wash pl

BAKER, BEN B
547 NW C St, Grants Pass
CYCLONE GAP CHROME MINE, 75 mi E of Grants Pass, underground, chrome
Idle

BALD MOUNTAIN MINE
Box 11, Sumpter
Owner: D N McTavish
Mine at Sumpter, Au, Ag, Silica
Walter C Fellows, mgr
Lloyd L Anderson, mine supt
Glenn F Anderson, mill supt
GEM & BUENA VISTA MINES
James T Bonner, Box 109, Downieville, Calif, supt

BARRICK, M F
Rt 2, Jacksonville
HOT BISCUIT, NEW DEAL & GOLD KING CLAIMS MINES, Upper Applegate dist, Jackson co, Au, Ag

BARTELS BROS MINING CO
Cottage Grove
Pres: Wm J Bartels Sr
Gen mgr: Wm J Bartels Jr
Supt: F J Bartels
CHAMPION MINE, Cottage Grove, Au, Ag, Cu, Pb, Zn, Fe
100-TON GRAVITY-FLOT MILL

BEAR CREEK MERCURY CO
Box 299, Prineville, Hg
J A Werner, gen mgr
Joe N Thornton, supt
15-ton Milling pl

BERREY, LeROY & MARTIN ROBINSON
Disston
BAY BASIN MINING CO, Bohemia dist, Pb
Under dev

BIGELOW, GEORGE
ELKHORN MINE, Josephine co, Au
One giant

BIG FOUR MINE, INC
Rt 2, Box 505, Grants Pass
Pres: Newell Wright
Secy-treas: R W Bartlet
GOLD PLACER MINE
J E Bartlett, gen mgr
Hydraulic operation

BLANK, JIM
Canyon City
Mine in Grant co, Au

BLUE CHANNEL MINE
Wolf Creek
Operator: Harry Stewart
PLACER MINE, Josephine co, hydraulic, 1 giant, Au

BOBBIT, J P
STORMBIRD PLACER MINE, Medford, placer, Au
Power shovel & dry-land wash pl

BONANZA MINES, INC
Box 270, Roseburg
Pres & gen mgr: J W Cook
Mgr, mine supt & assy: Burt Avery
Purch agt: J Williams
BONANZA MINE at Sutherlin, Ore, Hg
T Bidwell, mill fore
Herbert N Witt, engr
Gould 50-ton furnace
Idle

BOOTH, G B
Sunny Valley
COLUMBIA PLACER MINE, Josephine co, Au
Hydraulic operation on Upper Grave Creek, One giant
CLUMBY MINE, Au, Ag

BOWMAN, H L
Box 82, Jacksonville
Placer tailings in upper Applegate dist

BOWSER, W D
Box 162, Grants Pass
BOWSER #1 & ROBT E MINES, Curry co, Au

BRANDENTHALER, A
VIRTUE MINE, Baker, Au
Under dev

BRATCHER MINING CORP
Rt 1, Box 17, Ashland
Pres: L A Bratcher
VP: R C Van Vleet
Dir: John Nosler
BRATCHER MINE #1, 3 mi SW of Ashland, open-pit, W
GRAVITY MILL

BRICE CREEK MINING CO
Partners: Kenneth O Watkins, William S Fort, Loran L Stewart, Fay Stewart & Larry Chapman
STONEWALL MINE, Pb, Zn
BIG ROCK MINE, Au
GILBERTSON CLAIMS (War Eagle Mine), between Musick & Champion, Au

BRISTOL SILICA CO
Rogue River
Owner: F I Bristol, Silica, Ore
Silica Quartz property
Rolland Jones, supt
100-tons prod

BROWN, AL
Holland
Hydraulic operation on upper Wolf Creek, Au
One giant

BROWN, H L
Wolf Creek
Hydraulic operation on upper Wolf Creek, Au
Two giants

BROWN, M K & JAKE BENTLEY
Box 185, Wolf Creek
HAZEL QUARTZ MINE, Wolf Creek dist, Josephine co, Au, Ag

BRUNEAU, HENRY
Disston
BRUNNEAU PLACER MINE, on Martin Creek, hydraulic, Au
1 giant & centrifugal pump

BRYANT, EARL
Box 94, Baker
BAY HORSE MINE, Baker co, Au

BUCKHORN MINE
Wolf Creek
Owner: Vernon L Story
PLACER MINE in Greenback dist

BUFFALO GOLD DREDGING CO
Mt Vernon (Box 463, 7th & Mission Sts, San Francisco, Calif)
MT VERNON PLACER, Grant co, Au
Under dev

BUZZARD MINE
(see Al Sarena Mng Corp)

CAL-ORE MINE
PLACER MINE on Galice Creek, hydraulic, 1 giant, Au
L C Hudson, mgr

CALHOUN & HOWELL OREGON, LTD
Dale, Grant co
Mgr: Melvin L Howell
Mgr: Raymond K Calhoun
ROBBINS, ORIENTAL & NORTH FORK PLACERS, Grant co, dragline, Au, Ag

CELEBRATION MINE
Canyon City, Cr
Owner: Irving Hazeltine

CHAMPION LEASE
327 N 11th St, Corvallis
Partners: Kenneth O Watkins & George Shroyer
CHAMPION MINE 14 mi SE of Disston, underground, Au, Cu, Pb, Zn, Ag
FLOT MILL, custom milling for Bohemia dist
Kenneth O Watkins, gen mgr

CHRISTEAN BROS
Jacksonville
Mine on Jackson Creek, dragline, Au
Floating wash pl

CHROME KING MINE
Box 672, Grants Pass
Operators: Thompson & Cox
Mine near Grants Pass, Cd
Edward Cox, mgr & mine fore

CINNABAR MINES, INC
Prineville
VP & mgr: J A Maller
Mine near Prineville, Hg
Rotary furnace

CLARK, CLEO C
Leland
GOFF MINE, Josephine co, Hydraulic Placer, 2 giants, Au

CLINE, HARRY T
Glendale
TUNNEL SIX BAR, VETERAN & HIAWATHA MINES, 8 mi NW of Glendale, placer

COLLINS, Z J
Box 91, Williams
STEAMBOAT MINE, Jackson co, Au

CONSTITUTION GOLD MINING CO
(Bruce Dennis Estate) 403 Pacific Bldg, Portland
BUFFALO MINE, Grant co, Au
FLOT MILL

COOKE, DON
2914 NE 52nd Ave, Portland
IDAHO-OREGON PERLITE CO, N of Jordan Valley, Perlite

CROWN MINE
Marion co, Au, Ag, Cu, Pb
Under dev

CURL BOURNE MINES
Cracker Creek dist, Baker co
Au, Ag
Hal Bradley, Sumpter, foreman

CURRANT CREEK MINING CO
Box 122, Prineville, St
Operator: Mike Dragish
Under dev

DANT & RUSSELL, INC
Dantore Div, Box 150, Maupin
Pres: T W Dant
Mgr: E D Zoradi
LADY FRANCES MINE, 13 mi S of Maupin, Volcanic glass, open-pit
120-TON GRAVITY MILL
120-ton daily prod

DEEN, FRANK E
Bridgeport
BALM TREE GROUP MINE, Walheur co, placer, Au

DEEP GORGE MINE
Selma, Cr
Owners: J M & M N Grissom

DeJANVIER, GLEN
Gold Hill
Hydraulic, one giant, Au

DERRIG, R A
Azalea
DERRIG PLACER MINE, Douglas co, Au

DIMMICK MINE
615 Dimmick St, Grants Pass, Au
V L Dimmick
Under dev

DUSTIN, EARL
Box 492, John Day
LAST CHANCE MINE, Canyon dist, Grant co

EAST EAGLE MINING CO
5515-15th Ave NE, Seattle, Wash
Pres: G R Holderman
Gen mgr: Raleigh Chadwell
Dir: Robert Chadwell
EAST EAGLE MINE, Box 699, Baker, Ore, Au, Ag, Cu
Under dev

EICKEMEYER BROS
Post
MAURY MT MINE near Post, Hg
Under dev

ESTERLY MINE
Cave Junction, Au, Pt
Owner: R F Oliphant
Dragline Dredge
Under dev

EVANS, ERNEST E & WILLIS E
Box 344, Richland, (owners)
BADGER QUARTZ MINE, Eagle Creek dist, Baker co, Au, Ag

FEDERAL PLACER MINE
Route 2, Box 35, Jacksonville, Au
Operator: D N Snavely
Hydraulic operation on Little Applegate River, 1 giant, Au

FORREST QUEEN LOGGING & MINING CO
Route 1, Box 1179, Grants Pass
Pres: R W Sleight
VP: Virginia Niederman
Dir, gen mgr, purch agt: E L Niederman
FORREST QUEEN MINE, 7 mi N of Grants Pass, placer, Au
Wm McIntosh, mech engr & mine supt
John Fritz, asst mine supt
Hydraulic dredge
Under dev

GATEWOOD, BOB
Rt 2, Jacksonville
Ground sluicing, Au

GILSON PLACER MINE
(see Emerson Merrick)

GOLDEN EAGLE MINE
2017 7th St, Baker
Owner: Frank R Klein
GOLDEN EAGLE MINE, 16 mi S of Granite, underground, Au, Ag
10-TON STAMP & PLATE MILL
Under dev

GRABNER & LEONHARDY
3305 14th St, Baker
THOMASON, GRANDVIEW & LUCKY BOY MINES, Baker co, underground, Au

GREAT LAKES CARBON CORP
18 E 48th St, New York City, N Y
Pres: George Skakel
Gen mgr: C A Frankenhoff
Asst gen mgr: E T Frankenhoff
Prod mgr: McKinley Stockton
DICALITE DIVISION, 756 S Broadway, Los Angeles 14, Calif
D F Dyrsmid, ch engr
PLANT #2, Terrebonne, Ore
A J Carr, mill supt

GREY EAGLE MINE
Baker
Owner: Anthony Bradenthaler
Mine in Virtue dist near Baker, Sb, Au, W
75-TON FLOT MILL

HAINES, B R & C F
HAINES BROS PLACER MINE, Rt 2, Jacksonville
Hydraulic placer on Palmer Creek, 2 giants, Au

HAYES, BERT
STANDARD MINE, John Day, underground, Cu, Co, Au
Under dev

HELENA MINES, INC
327 N 11th St, Corvallis, Ore
Pres: Wm E Caldwell
VP & gen mgr: Kenneth O Watkins
Secy: Harold E L Barton
HELENA, OREGON-COLORADO & LEAD CRYSTAL MINES 14-19 mi SE of Disston, Ore; underground, Au, Zn, Pb, Cu, Ag
FLOT MILL

HELLICKSEN GOLD DREDGING CO, INC
Box 761, Wolf Creek
Pres & gen mgr: Geo Hellicksen
VP: Don Coulter
ROGUE PLACER MINE, 1½ mi SW of Wolf Creek, placer, Au, Platinum, Ag, Black Sand
Vacuum Dredge, 45 yds an hour
GRAVITY MILL
Under dev

HILL, C F
Wolf Creek
Hydraulic operations, 1 giant, Au

HILLIS, ROY
RAND PLACER MINE, Galice, hydraulic placer, 1 giant, Au

HI-POTENTIAL MINES
Main & River Sts, Cottage Grove
Owner: Ray E Nelson
UTOPIAN, SWEEPSTAKES & HIAWATHA GROUP MINES, 36 mi SE of Cottage Grove, underground, Au, Ag, Cu, Pb, Zn
Under dev

HOMESTAKE MINING CO
Amity
AMITY MINE, Ochoco dist, Crook co, underground, Hg
25-TON HERRESHOFF FURNACE
Under dev

INDEPENDENCE MINE
Kerby
Operator: Donald A Foster
PLACER MINE on Josephine Creek, 1 giant, Au

JANTZER, JOHN H
JANTZER PLACER MINE, Azalea
Hydraulic placer on Hogum Creek, 3 giants, Au

JAY GOULD CO
2715 6th St, Baker
Owners: Walter Brown, Baker, H G Burnham, Fairview & Karl Stanley, Gresham
JAY GOULD MINE, Greenhorn dist, Baker co, Au, Ag
Fred Wickham, supt
50-TON MILL

KETCHUM, JIM
Kerby
Ground sluicing, Au

KING MOUNTAIN MINES, INC
Grants Pass
WARNER MINE, Jackson co, Au
Operator: Erle C Annes
Under dev

KLONDYKE MINING & MILLING CO
Box 103, New Pine Creek
Pres, Dir, & gen mgr: Ed Benefiel
Dir: Robert Severan, Paisley
VP: Jim Benefiel
KLONDYKE MINE, 8 mi E of New Pine Creek, Au, Ag
GRAVITY MILL
Under dev

KNOX, GIFFORD, W S WALSH, FRANK HEATH & J J COTTER
Box 434, Grants Pass
JUMP-OFF-JOE-GROUP, Upper Jump Off Joe Creek, Josephine co, placer, hydraulic, Au
SMALL MILL & CONCENTRATOR

KRIEGER, CLARENCE
Rt 1, Box 7, Jacksonville
KRIEGER PROPERTY, Au, Ag

LA COMBE & DUNCAN
9218 SE Washington St, Portland
SHAMROCK MINE, Baker dist, Baker co, Au, Ag

LADY FRANCES MINE
(see Dant & Russell, Inc)

LANCE MINE
Box 603, Gold Hill
Owner: R E Cook
LANCE PLACER MINE on right fork of Foots Creek, Hydraulic, 1 giant, Au

LARSON, MERWIN
LARSON PLACER MINE, Rt 2, Jacksonville, placer, sluicing, Au

LAST HOPE MINE
Merlin, Au
Operator: Max N Howland

LEWIS PLACER
Galice
Operator: Bud Lewis
Hydraulic operation, 1 giant, Au

MANGANESE PRODUCTS, INC
4260 W Marginal Way, Seattle 6, Wash
Pres: J R Allen
FORMER ALUMINA PLANT at Salem

McCALEB CHROME MINE
Box 26, Selma, Cr
Pres: R E McCaleb
Jack Kelly, fore

McCLUNG, H H
Box 241, Rogue River
Owners: H H & B D McClung
McCLUNG PLACER MINE, Gold Hill dist, Jackson co, Au, Ag

McCULLOUGH, LLOYD
Box 142, Durkee
PATSY M & THERESA KAY, Au placers, Baker co
Hydraulic

McINTOSH PLACER
Wolf Creek
Operator: Harold McIntosh
Hydraulic operation, Upper Coyote Creek, 1 giant, Au

McMANUS, R E
Route 1, Gold Hill
McMANNUS PLACER, Hydraulic, 1 giant, Au

McMICHAEL, WM
Azalea
DOUGLAS MINE, Riddle dist, Douglas co, Au, Ag

McTIMMONDS, BERT
1206 E M St, Grants Pass
Lessee: Harmon Gold Mines, Inc
LITTLE ARCTIC PLACER MINE, Josephine co, Au

MEAD, WM H
208 Freemont St, San Francisco, Calif, Lessee
VICTORY MINE, Box 197, Glendale
Hydraulic placer

MERRICK, EMERSON
112 N Riverside, Medford
Gen mgr: E P Merrick
GILSON PLACER, 15 mi W of Jacksonville, Au, Ag
Hydraulic operation

MULKEY, CHAS
Lessee: Henry A Friedland, Sumpter
Owner: Chas Mulkey
MULKEY MINE, Greenhorn dist, Baker co, Au, Ag

MYERS, R A
4410 Colver Road, Medford
KATE EL MINE, Jacksonville dist, Jackson co

NARON & VANDEVENTER
Oregon Ltd, P O Bin V, Arvin, Calif
LEWIS MINE, Rogue River near Galice, dragline & wash pl, Au

NORTHWEST COPPER CO
(formerly Lotts-Larson)
Mine in N Santiam Dist, Marion co, Au, Ag, Cu, Pb
Under dev

N W DEVELOPMENT CO
313 Pacific Bldg, Portland 4, Perlite
Under dev

O'BRIEN, D S
Prairie City
NEBRASKA BOY MINE #1, Quartzburg dist, Grant co, Au, Ag

ONSTOTT, RALPH
Star Rt, Box 72, Grass Valley, Calif
GOLD DREDGE MINE, Upper Applegate dist, Jackson co, Au, Ag

OREGON CHROME MINES, INC
Box 475, Grants Pass
Lessee: W S Robertson
Mine at Oak Field, near Selma
Under dev

OREGON KING MINES
Ashwood, Jefferson co, Au, Ag, Cu, Pb, Zn, Fe
Lessee: Henry Andereff
50-TON FLOT MILL

PACIFIC SMELTING & REFINING CO
Elkhorn, Zn
Operator: J D Hewitt
Under dev

PETRI, TOM & JOE & FURMAN SMITH
Rt 1, Box 873, Grants Pass
BARR MINE, Josephine co, hydraulic, Au

PIERCE, PAUL
Jacksonville
Hydraulic operations, 3 giants, Au
Under dev

PIEREN, WESLEY & EARL & HENRY BRUNSWICK
Galice
LEIPOLD PLACER MINE, Josephine co, hydraulic placer, 1 giant, Au

PIERSON, JOHN & GEORGE
Susanville
BEAR CREEK DRIFT PLACER MINE, underground, placer, Au, Ag
Hydraulic operation
Small prod

PINE CREEK PLACER CO
Hereford
PINE CREEK PLACER MINE, Au

PITTOCK, W H
PITTOCK PLACER MINE, Applegate, sluicing, Au

POKORNEY, MAX A
SUETTER MINE, Kerby, hydraulic placer, 2 giants, Au

PORTER BROS DREDGING CO
(Clear Creek), Granite, Au

PORTER & CO
Box 592, Baker
Gen mgr: R P Porter
GOLD PLACER at Granite
4,000-YD BUCKET DREDGE
Clay LaPon, dredgemaster

PORTLAND CONSOLIDATED
2017 7th St, Baker
Owner: Frank R Klein
Lessee: Chas Sayco & Son
PORTLAND CONSOLIDATED MINE, 14 mi SW of Granite, underground, Pb, Ag, Zn, Au
Under dev

POWDER RIVER DREDGING CO
(formerly Baker Dredging Co)
Baker
Pres: Carl Diebolt
Res mgr: L A Skillings

PYX MINE
Baker
Owner: Jess Edwards & Associates, 2435 Valley St, Baker
PLACER MINE in Greenhorn dist, Au
15-TON STAMP MILL
Under dev

QUEEN OF BRONZE SMELTING & MINING CO
822 N 7th St, Grants Pass
Pres: E R Waite
QUEEN of BRONZE MINE, Waldo dist, Josephine co, Cu
Under dev

QUICKSILVER SYNDICATE
Blackbutte
Pres: Frank Taylor
BLACK BUTTE MINE, Hg
Fred L Mills, gen mgr
75-TON FLOT PL
Idle

RAND, LANGDON
Baker
Pres: Senator Irving Rand, Public Service Bldg, Portland
JOHNIE & CATHERINE CLAIMS, Sb, Au, W
About 30 claims at Homestead, adjoining Iron Dyke Mine, Cu, Ag, Au

RED LEDGE, INC
518 Idaho Bldg, Boise, Idaho
Pres: William H Simons
Secy: Elmer Fox
Mine near Robinette, Cu, Ag, Au

RICK, W D
Box 223, Baker
MACY MINE, Baker co, underground, Au
SMALL GIBSON MILL

RIFE, RAY
TENNESSEE GULCH PLACER MINE, Glendale, hydraulic placer, Au

ROBERT E MINE
Box 161, Grants Pass, Au, Ag
Owner: W D Bowser
10-TON CYANIDE MILL
Under dev

ROBERTSON, WILLIAM S & ASSOC
P O Box 475, Grants Pass
HUMDINGER MINE, Lower Applegate dist, Josephine co, Au, Ag
BUNKER HILL MINE, Josephine co, Au
Under dev

ROSS, WALTER
Granite
LUCKY STRIKE MINE, Greenhorn dist, Grant co, Au, Ag

SCHLEIGH PLACER
Operators: W C Schleigh & G B Booth
SCHLEIGH PLACER MINE, Wolf Creek, hydraulic, 1 giant, Au

SEATON, WILLIAM
1331 10th St, Baker
BETTY JANE MINE, Baker dist, Baker co, Au, Ag

SEMON, R D
SHAMROCK MINE, Rt 2, Box 29, Medford, Ni, W, Co
Under dev

SMITH, A C, LUMBER & MINING CO
Box 701, Wolf Creek
Pres: Andrew C Smith
GOLD PLACER MINE at Wolf Creek
Under dev

SNAVELY, ORVILLE N
Rt 2, Box 35, Jacksonville
OLD FEDERAL MINE, Upper Applegate dist, Jackson co, Au, Ag

SOUTHERN OREGON MINING CO, LTD
1260 Sunset St, Medford
PLACER MINE near Ruch, Au
John D Bowdish, supt
1-yard shovel & 8-yard asher

SPANISH GULCH MINES, INC
Antone Rt, Mitchell
(See Waterman Placer)

SPEAKER, HENRY
SPEAKER PLACER MINE, Wolf Creek, hydraulic placer, 4 giants, Au

STERLING MINES, INC
Jacksonville
STERLING MINE, placer, Au
D Ford McCormick, gen mgr
Paul E Pearce, operator & lessee
200-YD HYDRAULIC

STEWARD, HARRY
Box 115, Wolf Creek
M H DAVIS GROUP MINE, Greenback dist, Josephine co Au, Ag

STONE, QUENTIN
803 East D St, Grants Pass
BENO MINE, Josephine co, Au

TAKILMA DREDGING CO
Box 15, Takilma
Pres: Howard Heasley
TAKILMA DREDGING MINE, 1/4 mi N of Takilma, placer
DRAGLINE DREDGE
Under dev

TAR BABY MINING CO
Stock Exchange Bldg, Salt Lake City, Utah
Pres: Richard Whitmore
Gen mgr: H E Havenor
MUSICK MINE, Disston, underground, Au Cu, Ag, Pb, Zn
Oregon mgr: Kenneth O Watkins
East end, #6 level leased to Wyett & Nordstrom: balance leased to Helena Mines, Inc

THOMAS, FRANK
THOMAS PLACER MINE, Sunny Valley, hydraulic, 1 giant, Au

THOMPSON & COX
Box 672, Grants Pass
CHROME KING MINE, Chrome
Edward Cox, gen mgr

TILLER DEVELOPMENT CO
Yeon Bldg, Portland
Mine near Tiller, Hg
Mgr: Roy F Hickman
35-ton furnace

TRICKEL, C J
2010 Third St, Baker
BULL RUN, TIMBER CANYON & FRIDAY MINES, Baker co, Au

TULARE, GEORGE
Route 2, Box 371, Gold Hill
SYLVANITE MINE, 3 mi E of Gold Hill Ore, underground
Idle
CORPRAL G MINE, 6 mi N of Gold Hill Ore, underground, Au
Idle

WATERMAN PLACER
Mitchell
Pres & gen mgr: Sydney C Zinter
VP: A B Estabennet
Dir: Gene Ernfrey
Purch agt: W L Eastman
Gen supt: W A Smith
Lessee: Spanish Gulch Mines Inc
WATERMAN PLACER MINE, 25 mi E of Mitchell, placer, Au, Ag, Pt
Glen Findley, mech engr
Frank Findley, safety engr
DRAGLINE-HYDRAULIC DREDGE
1,000-yds prod daily

WATKINS, KENNETH O
327 N 11th St, Corvallis
WARRENER MINE, underground, Pb, Zn
SUNSET MINE, underground, Au, Cu, Pb, Zn
LEROY MINE, underground, Cu, Pb, Zn
LEHMEN MINE, underground, under dev
ANNIE TRAIL GROUP MINES, underground, Under dev
CHAMPION MILL

WEBSTER PLACER
Sunny Valley, Au
Operator: Ray B Webster

WESTERN COLD DREDGING CO
1400 Folsom Street, San Francisco, Calif
Pres: S Lowengart
Mine at John Day, placer, Au
Edward C Styskel, gen mgr
5,000-YD BUCKET DREDGE & FLOT

WHITE EARTH PRODUCTS CO
Rt 2, Caldwell, Idaho
Pres: Joseph Campbell
Secy-treas: Charles S Klingaman
WHITE EARTH, open-pit, Diatomaceous earth
J D Keifer, mill supt

WILD, G I, & EARL A PACK
Box 1186, Boise, Idaho
GIVENS & NICHOLS MINE, channel placer near Bridgeport, Au, Pt

WILLIAMS, ORA
Rt 2, Box 56, Jacksonville
Ground sluicing, Au

WRIGHT, D A
Rt 2, Box 95, Jacksonville
STEAMBOAT MINE, 30 mi W of Jacksonville, underground, Au, Ag

YOCUM, LOY
Wolf Creek
THREE L's MINE, Galice dist, Josephine co, Au, Ag

YOUNG, EARLE N
414 N Second St, Grants Pass
RAINBOW MINE, Josephine co, Au

UTAH

ALTA UNITED MINES CO
224 E First South St, Salt Lake City
Pres & gen mgr: George H Watson
Mine at Alta, Au, Ag, Cu, Pb, Zn, Fe, & bismuth
Prod from dev

AMERICAN FORK CONSOLIDATED MINES
405 Dooly Bldg, Salt Lake City 1
BLUE ROCK (Pacific) MINE, 20 mi NE of Pleasant Grove, underground, Ag, Pb
Pres: H G Blumenthal
VP: N J Nielsen
Secy-treas: W J Robertson
Gen supt: Douglas Nielsen
Under dev

AMERICAN GILSONITE CO
248 S Main, Salt Lake City 1
Pres: Ernest F Goodner
Secy-treas & purch agt: E H Owen
Mining gilsonite
John H Baker, mine supt
F Williams, asst mine supt
250-tons prod daily

AMERICAN METAL MINING CO
21 SW Temple St, Salt Lake City
Pres, gen mgr & purch agt: Charles S Woodward
VP: Ben B Hall
Gen supt: Frank Yanchar
AMERICAN METAL MINE, 20 mi E of Midvale, underground, Au, Ag, Pb, Cu, Zn
Ray E Marsell, mine engr & geol
Under dev

AMERICAN SMELTING & REFINING CO
(For officers, see Northeastern listing
UTAH DEPARTMENT, 700 Pacific Natl Life Bldg, Salt Lake City
R D Bradford, gen mgr
R C Cole, ore buyer
A R Worthen, purch agt
J Fred Johnson, mgr operations Western mng dept
D J Pope, Western mng dept
W R Landwehr, ch geol Western mng dept
Garfield Copper Smelter, Garfield
W G Rouillard, smelter supt
R Thompson, supt

ARTESE, ROSS J & RAY A JOHNSON
Enterprize
CLAIMS, 9 mi S of Enterprize, open-pit, Fe
Under dev

BAR X MINING CO
Pres: Reno Tedesco, Box 1053, Salt Lake City, Utah
ESTHER GROUP MINE, Erickson dist, Tooele co, Zn, Pb, Ag

BEAVER CREEK MINING CO
Spanish Fork
Mine near Park City, Mn, Au, Ag, Pb
Under dev

BEAVER GOLD & COPPER CO
3611 Lime Ave, Long Beach, Calif
MINE at Milford, Cu, Pb
Under dev

BEAVER VIEW MINE
Adamsville
Owner: Morgan Evans
Lessee: R W Glenny & Assoc, Salt Lake City
Mine located in Granite mng dist, Beaver co, 5 mi N of Adamsville, Au, Ag, Pb, Zn
Scott Cuttler, mine fore

BIRCH, L B
Lark, (Lessee)
BIRCH COPPER MINE at Lark, underground, Au, Ag, Cu, Pb, Zn

BLACKHAWK NO 1
in Bluebell dist, Pb
Operator: Owen Malin, Moab &
J Calle II, Murray

BLUE EAGLE MINING CO
c/o Leslie S Gillett, 192 S Second West, Tooele
BLUE EAGLE MINES NUMBERS 1, 2, 3, Rush Valley dist, Tooele co, Zn, Pb, Ag

BONANZA MINES
(see American Gilsonite Co)

BONNEVILLE, LTD
540 W 7th South St, Salt Lake City 4
Pres: William L Bradley
Gen mgr: Lockwood W Ferris
Purch agt: William R Thomas
Mine at Wendover, Potassium Chloride
Blair H Lamus, mine & mill supt
Jesse Keton, asst mine & mill supt
Hands Wiley, mill fore
Nelson Lamus, mine fore
Dan C Hunter, met
Clyde Andrew, assy
1,000-TON FLOT MILL

BROZILL, CHARLES
Stockton
TIPTOP AMENDED MINE, Tooele co

BULLION MONARCH MINING CO
210 Utah Oil Bldg, Salt Lake City
Secy: Robert N Cooper
BULLION MONARCH MINE, Marysvale, open-pit, U

CARDIFF MINING & MILLING CO
704 Newhouse Bldg, Salt Lake City 1
Pres & gen mgr: L E Stein
VP: M R Richards
Secy-treas: R A Glenny
CARDIFF MINE at Big Cottonwood Canyon, near Alta, underground, Au, Ag, Pb, Zn
A G Kolovos, mine supt
Operated by Cardiff Coalition Co
Pres: Dr Scott Smith

CENTRAL STANDARD CONSOLIDATED MINES
390 E 900 South, Provo
Pres: Thomas F Pierpont
VP: Thos G Pierpont
Secy: M Gessford
Mine near Provo, Au, Ag, Pb
Under dev

CENTRAL SULTANA MINING CO
Mona
Pres: Lucius Rowe
Dir: Claude Key
Dir: Maurice Chapman
Gen mgr: Eugene Wilkey
Ag, Pb
Under dev

CHESLEY & BLACK
Delta
FLORENE QUEEN MINE, Delta, open-pit, Fluorspar
180-tons prod weekly

CHIEF CONSOLIDATED MINING CO
408 Dooley Bldg, Salt Lake City
Pres & dir: Cecil Fitch, Eureka
VP, gen mgr & dir: Cecil Fitch Jr, Eureka
Acct, asst secy & dir: W W Watson, Salt Lake City
Dir: Howard Fitch, San Francisco
Dir: Mahlon S Kemmerer, New York
CHIEF #1, GEMINI, EUREKA HILL, APEX STANDARD, PLUTUS & EAST CROWN POINT CONSOLIDATED MINES at Box 269, Eureka, underground, Pb, Zn, Ag, Au, Cu
M Carter, ch clk
J G Hall, gen supt
Fred Johnson, lime pl fore
Alton D Baker, ch elec
Sid Tregaskis, mast mech
W G Stevenson, geol
H J Pitts, mine engr
Howard R Craig Jr, geochemist
Webester Brady, mine fore
12,000-tons prod monthly

CLEGHORN, WILLARD
254 W First South, American Fork
LIVE YANKEE MINE, Utah co, Pb, Zn
Under dev

COLBATH, ALEX
Leeds
SILVER REEF MINE at Leeds, underground, U

COLORADO CONSOLIDATED MINES CO
1114 Walker Bank Bldg, Salt Lake City
Pres: H E Naddatz
Gen mgr: M D Paine
COLORADO CONSOLIDATED MINES, Dividend, underground, Au, Ag, Cu, Pb

COLORADO FUEL & IRON CORP
(for officers, see Colo listing)
BLOWOUT MINE, Cedar City, open-pit, Fe
R L Wahl, res engr

COLUMBIA IRON MINING CO
Box 269, Salt Lake City
Pres: Walther Mathesius
VP: L J Westhaver
Purch agt: G R Ten Eyck
Gen supt: G D Macdonald
Open-pit Iron Mine 20 mi w of Cedar City
S G Bargis, geol
R C Talbott, ch engr
Crushing & Screening Plants
123 N T prod monthly

COLUMBUS REXALL CONSOLIDATED MINES CO
Secy-treas & gen mgr: A J Selander
HASKELL CLAIM
Lessee: Steve Basta
REXALL MINE at Alta, Ag, Pb, Cu
Under dev

COMBINED METALS REDUCTION CO
218 Felt Bldg, Salt Lake City, P O Box 150
Pres & gen mgr: Edward H Snyder
VP's: Otto Herres & W H Kelsey
Purch agt: E G Black
Gen supt: S E Craig
CALUMET MINE, 6 mi S of Tooele, underground, Zn, Pb, Fe, Ag, Au
E B Young, geol
Ernest Klepetko, met mgr
Henry Hansen, ch chemist
Winford Hector, mill supt
M J Kennard, ch engr
1,000-TON FLOT MILL

COMMONWEALTH LEAD MINING CO
424 Felt Bldg, Salt Lake City
Pres, gen mgr, purch agt & mine engr: J P Featherstone
VP: R B Garff
Dir: Dean R Featherstone
COMMODORE MINE, 10 mi SE of Stockton, underground, Pb, Ag, Cu, Zn
Ray E Marsell, geol
Under dev

CONSOLIDATED URANIUM MINES
502 Felt Bldg, Salt Lake City
Pres: E G Frawley
Dir: Roy A Hardy, Reno, Nev
Dir & mine supt: R J Bonnemort
56 CLAIMS at Temple Mountain, U
Worked under contract by Minerals Eng Co
100-tons prod daily
YELLOW CAT GROUP near Thompson, U
68 CLAIMS in Dry Valley dist, San Juan co U
Leased from Vanadium Corp of America

CONTINENTAL MINING & MILLING CO
Greenriver
MINES near Greenriver, U, V

COPPER MT MINING CO
Pres: Moses Taylor
COPPER MT MINE, underground & open-pit, Ag, Cu, Pb
I M Westover, mine fore
Under dev

CUPRIC MINES CO
39 Exchange Place, Salt Lake City 1
Pres: Paul H Hunt
Gen mgr: J G Sargent
CUPRIC MINE, Milford, Cu
Under dev
CACTUS MINE, Milford, open-pit, Cu

DESERT EXPLORATION CO
428 Coatsville Ave, Salt Lake City
Pres: G H Evans
Dir: Stanley S Cheever
Dir: Hal Crumbo
IDA, DESERT VIEW, BLACKJACK MINES & SIMPSON MT MINES in Erickson dist, Au, Ag, Pb, Zn, Mn, Cd
Jack Morse, mine supt
50-TON GRAVITY MILL under dev to be operated by United Mng Dev Co Inc, 256 E 3rd St, Salt Lake City

DIXIE MINE
Tutsagubet dist, Washington co, Cu, Pb
Operator: E L Cox, St George

DRAGON CONSOLIDATED MINING CO
Eureka, Ag
Secy: Rom Warburton

DUTCHMAN MINE
American Fork dist, Utah co, Zn, Pb
Operator: Willard Cleghorn, American Fork
Under dev

EAST STANDARD MINING CO
Eureka
PROPERTIES near Marysvale, U
EAST STANDARD MINE near Eureka, underground, Pb, Ag

EMPIRE MINES CO
821 Kearns Bldg, Salt Lake City
Secy-treas: Rom Warburton
EMPIRE GROUP, Juab co, Au, Ag

ETNA GOLD MINES, INC
208 Beckley Bldg, 208 Vegas, Nevada
Incorporators: R H Vanderhush, George Reed & R G Steffes
Mine & mill 18 mi W of Modena
175-TON MILL
Idle

EUREKA BULLION
Lessees: North Lily Mng Co, Box 1072, Salt Lake City
Pres: F A Wardlaw Jr, Au
Under dev

EUREKA LILLY CONSOLIDATED MINING CO
1114 Walker Bank Bldg
Pres: H E Naddatz
VP: Mrs Harriet D Travis
Gen mgr & purch agt: M D Paine
Gen supt: F W Hanson
EUREKA LILLY MINE, Dividend, underground, Au, Ag, Cu

FAUCETT, V W
Greenriver
CAMP BIRD MINE, underground, U

FLAGSTAFF BONANZA MINING CO
416 Main St, Park City, Au, Ag, Pb, Cu
Pres: Charles Moore
Clifford Workman, mine fore
Property leased from New Park Mng Co
Under dev

FRISCO SILVER-LEAD MINING CO
c/o Tintic Lead Co, 39 Exchange Place, Salt Lake City
MINE, San Francisco Dist, Beaver co, Au, Ag, Cu, Pb

GAGON, FRED & GENE
Roosevelt
CLAIMS at Farm Creek, 30 mi N of Roosevelt, Barite, Mn

GARBETT, REUBEN
Box 126, Park City, Utah
SILVER CREEK TAILINGS, Uintah dist, Summit co, Zn, Pb, Cu

GARFIELD COPPER SMELTER
(see American Smelting & Refining Co)

GENEVA STEEL CO
(see Columbia Iron Mng Co)

GODIVA MINING & MILLING CO
c/o Rom Warburton, 820 Kearns Bldg, Salt Lake City 1
Secy-treas: A H McChrystal
Mine at Eureka, Pb, Zn, Ag
2,000-tons prod annually

GOLDEN GLEBE CONS MINES, LTD
VP: John V Long, 56 Orpheum St, Salt Lake City
SALT LAKE & MAMIE MINES, Free Coinage dist, Tooele co, Zn, Ag, Under dev

GOLDEN WEST CONSOLIDATED MINING CO
63 W Center St, Provo
Pres: H P Cannon
Secy: M A Bourne
Mine near American Fork, Pb, Ag, Zn
Under dev

GORLINSKI & WHEELER, INC
c/o J H Wheeler, 200 Edison St, Salt Lake City
SILVER KING WESTERN MINING & MILLING CO, Summit co, Pb

GRAMLICH, WALTER
Greenriver
VANURA MINES (27 claims) near Greenriver, open-pit, U

HAMPTON MINING CO
Box 24, Stockton
Pres: M Chamberlain
Secy: Chas E Street
SILVER EAGLE MINES or ARGENT MINE, Stockton, Au, Ag, Pb, Zn

HANLEY, J C, JR
Box 234, Milford
ST MARY GROUP, Beaver co, Pb, Under dev

HENRY, JOHN & DON McINTOSH
Marysvale
CLAIMS near Marysvale, U

HONEY COMB MINING CO
Marysvale
Pres: J W McAffee
VP: Don Sheldon
Dir: Stewart Sheldon
Purch agt: Onus Beaur
Gen supt: H P Bertelsen
HONEY COMB MINE, 75 mi NE of Delta, underground, open-pit, U
H P Bertelsen, mine supt
Under dev

HORN SILVER MINES CO
39 Exchange Place, Salt Lake City 1
Pres: Paul H Hunt
Gen mgr: J G Sargent
Secy-treas: D H Bullough
HORN SILVER MINE, Milford, Au, Ag, Pb, Zn
Lessees: Metal Producers, Inc

HORNET NO 1 MINE
Callao, U
Operators: D V Timm & Ira Timm

HOWE SOUND CO
750 Fifth Ave, New York, N Y
(For officers see Washington listing)
REFINERY near Garfield to process ores from Blackbird, Idaho
Eventual capacity: 3,000,000 lbs Co yearly
Under dev

HOWELL MINING CO
610 Newhouse Bldg, Salt Lake City
Pres: Rich Whitmore
Secy: H B Hall
Gen mgr: H Earl Havenor
DUTCHMAN MINE, GLOBE MINE near American Fork, underground, Zn, Pb, Ag, Cu
YELLOW CANARY CLAIM in Marysvale Dist, U

INTERNATIONAL SMELTING & REFINING CO
25 Broadway, New York 4, N Y
Subsidiary of Anaconda Copper Mng Co
(For officers of Anaconda Copper Mng Co, see Montana listing)
Pres: Cornelius F Kelley
VP's: Frederick Laist & E G Somerville
Secy-treas: C E Moran
Compt: W Kenneth Daly
Asst Compt: H C Barteau
Asst secy-treas: W H Grahl
Asst secy: J D Murphy
Asst treas: A P Dohrman
Res agt: wm J Forman, Reno, Nevada
Agent: Rom Warburton, Utah

UTAH OPERATION: 810 Kearns Bldg, Salt Lake City, Utah
Frank A Wardlaw, Jr, gen mgr
J F Dugan, supt of mng operations
J H Collins, purch agt
MILL & SMELTERS near Tooele
P L Garnett, metal mgr
Carlos Hardwell, gen supt
Robert E Long, mech engr
T K Voyer, safety engr
H T Goodjohn, ch chem
1,300-TON FLOT MILL
10,000-tons Zn concentrate (50% Zn) annually
1,000-TON LEAD SMELTER
40,000-tons Pb bullion prod annually
600-TON ZINC SLAG FUMING PL
20,000-tons Zn fume (77% Zn) prod annually

KENNECOTT COPPER CORP
120 Broadway, New York 5, N Y
EXECUTIVE OFFICERS:
Pres: C R Cox
VP: J C Kinnear
VP, Legal Dept: R C Klugescheid
Ch exec comm: C T Ulrich
Secy: Robert C Sullivan
Treas: E S Hahn
Asst secy & asst treas: Gordon B Russell
Gen purch agt: R P Lamborn
Gen traffic mgr: S E Taylor
UTAH COPPER DIVISION, Box 1650, Salt Lake City, Utah
Executive or General Officers:
Gen mgr, Utah Copper Div & West Mng Operations: Louis Buchman
Asst gen mgr: E W Englemann
Asst to gen mgr: Roy Hatch
Dir of indl rel: D C Houston
Dir of lab rel: J C Landenberger Jr
Dir of pub rel: N W Aldrich
Accounting Department
Div compt: G A Soutter
Ch clk: L J Farrer
Ch mill acct: E J Gardner, Garfield
Ch mine acct: A W Watson, Bingham
Purchasing & Stores
Asst gen purch agt, west Mng div: J D Carter
Storekeeper: J W Hild, Garfield
Storekeeper: L E Stillman
Engineering
Ch engr: G C Earl
Asst ch engr: L C Jones
Engr of mines: A Soderberg
Pl engr: Geo A Parker
Mechanical
Mast mech mine: Geo W Holman, Bingham
Gen mast mech, mills: A J Fitzgerald, Garfield
Mast mech, mills: L Baldee, Garfield
Central Power Station, Garfield
Ch engr: H P Early
Asst ch engr: J H Harkins
Mills Ore Haulage, Garfield
Supt: L S Hills
Roadmaster: R C Davis
Traffic Dept
Asst tr mgr: T H Perleywits
UTAH COPPER MINE, Bingham Canyon, open-pit, Cu, Mo, Au, Ag
Supt of mines: L F Pett
Asst mine supt: V H Barlow
Empl dir: E B McFarlane
Safety engr: G W Knudsen
80,000-tons prod daily
MAGNA SELECTIVE FLOT MILL, Garfield
ARTHUR SELECTIVE FLOT MILL, Garfield
Gen supt of mills: F H Sneigh
Supt, Magna pl: John Allan
Asst supt, Magna pl: Thomas Barker Jr
Supt, Arthur pl: C G Quigley
Asst supt, Arthur pl: F M Barton
Empl dir: M A Moffat
Gen dry fore: G B Martin
Elec engr: R J Corfield
Asst elec engr: John C Pearson
Safety engr: R L Erickson
Ch met engr: T A Janney
Asst ch met engr: A G Johnson
Ch res chem: C M Nokes Jr
Ch anal chem: V A Frazer
Garfield Water Co & Garfield Improvement Co, Garfield
Supt: H C Anderson
Utah Refinery, Garfield
Supt: H A Shaw
Mast mech: Noland F Johnson
Electrolytic Copper Refinery
Under dev

KING DAVID MINING CO
26 Stock Exchange Bldg, Salt Lake City 1
Pres: Paul H Hunt
Gen mgr: J G Sargent
Secy-treas: D H Bullough
KING DAVID MINE, Milford, Ag, Cu, Pb, Zn
Under dev

LEE & SMITH
c/o Reginald G Smith, Stockton
FOUR METALS MINE, Tooele co, Pb, Zn

LEONORA MINING & MILLING CO
319-320 Atlas Bldg, Salt Lake City 1
Pres, dir & mgr: John Matson
VP: John A Child
Secy-treas: H E Giers
Dir: B N Hall
Dir: W F Lund
Mine 9 mi W of Milford, Au, Ag, Pb, Zn, Cu
Under dev

LEVAN MINING CO
Box 111, Provo
Pres: Joseph H Peterson
Gen mgr: S D Trotter
Secy: Leon Newren
GUY LODE MINE, underground, Mn
20-tons prod daily

LILE, W E & SONS
Box 382, Moab
Pres: H D Lile
VP: W E Lile
Dir: Glenn Lile
POLAR MESA MINES, 55 mi NE of Moab, underground, U, V
500-tons prod monthly

LITTLE MAY MINING CO
319-320 Atlas Bldg, Salt Lake City 1
Pres, dir & mgr: John Matson
VP & dir: B B Hall
Secy-treas & dir: H E Giers
Dir: W F Lund
Dir: F B Nadebaugh
LITTLE MAY MINE, Tintic Mng dist, Eureka, Au, Ag, Pb, Zn, Cu, S, Fe, Bismuth
Under dev

LOVELESS & STAHELI
c/o Wayne J Loveless, Payson
VAGABOND MINE, Mount Nebo, Mono dist, Juab co, Pb

M & M LEAD MINING CO
Fillmore
M & M LEAD MINE, Millard co, Pb, Zn

MADISON MINES CO
518 Wasatch Oil Bldg, Salt Lake City
Pres & gen mgr: Nicholas Morgan Jr
MADISON MINE, Stockton, Tooele co, underground, Au, Ag, Pb, Zn, Cu
Under dev

MAGNOLIA LEAD & OIL CO
C W Anderson, Manti
Secy-treas: Kenneth C Griffith, Salt Lake City
JOHN HENRY CLAIMS near Marysvale, U

MAJOR METALS MINING CO
342 Canyon Road, Logan
Pres & gen mgr: H C Hansen
VP: E Stettler
BLUE MOON MINE, 3½ mi E of Hyrum, underground, open-pit, Zn
H C Hansen, geol
Ralph B Maughan, mine supt & mine fore
W B Douglass Jr, asst mine supt
15-tons prod daily

MAYFLOWER MINING & DEVELOPMENT CO
Park City
Mgr: William Gay
AMERICAN FLAG MINE near Park City, underground

McFARLAND & HULLINGER
32 Pinehurst Ave, Tooele
HIDDEN TREASURE MINE in Ophir dist, Zn, Pb, Cu
DALY & ONTARIO DUMPS, Summit co, Au, Ag, Pb
K L Erickson, supt, Box 588, Park City

METAL PRODUCERS, INC
Milford
Gen mgr: D C Peacock
Gen supt: J P Lowe
HORN SILVER MINE, 10 mi W of Milford, underground, Pb, Zn, Ag, Au
R V Thompson, mill supt
Geo Bush, mill fore
500-TON FLOT MILL

METALS COALTION MINE
825 S 10th East St, Salt Lake City
Pres: Leo Peterson
Gen mgr: E H McCauley
Secy: J M Calderwood
Underground & open-pit Mine, Au, Ag, Cu, Pb, Fe, e, Mo
E H McCauley, mine fore
Under dev

MONO-KEARSARGE CONS MINING CO
Pres: Alonzo MacKay, 209 Atlas Bldg, Salt Lake City
Leased to United States Smelting Refining and Mining Co
MONO-KEARSARGE GROUP, Tooele co, Pb

MONOCCO MINING CO
c/o W C Card, 3081 South State St, Salt Lake City, Utah
MONOCCO MINE, Clifton dist, Tooele co, Ag, Pb

MONTEZUMA MINES CO
Monticello
Pres: Rendell A Sitton
Mine near Monticello, Ra, U, V

MORENO-CRIPPLE CREEK CORP
405 Interstate Trust Bldg, Denver 2, Colorado
Pres & gen mgr: Ray A Bennett
VP: H W Balsley
URANIUM PROPERTIES in Moab, Under dev

MT MINES CO
21 S Temple St, Salt Lake City
Pres & gen mgr: Charles S Woodward
Secy: R W Edmunds
Mine near Alta, Au, Ag, Pb, Zn, Cu, Fe
R E Marsell, geol
Glen A Finlayson, engr
Under dev

MT VIEW MINING CO
Secy: Rom Warburton, 621 Kearns Bldg, Salt Lake City
MOUNTAIN VIEW GROUP, Utah co, Ag, Au, Pb, Zn

NASH, N E & CLYDE ADAMSON
Box 77, R F D, American Fork
FLORAL LODE, American Fork dist, Utah co, Zn, Pb, Ag

NEW MAJESTIC MINING CO
Pres: E C Barton, Atlas Bldg, Salt Lake City
PROPERTIES near Milford, Under dev

NEW PARK MINING CO
Keetley
Pres & gen mgr: W H H Cranmer
VP: R C Wilson
Secy & dir: Fraser Buck
Asst secy & dir: Robert L Cranmer
Dir: James W Wade
Dir: Orvel J Bonnett
Purch agt: Carl D Harper
Underground, Au, Ag, Cu, Pb, Zn
Ray E Gilbert, ch geol
Peter Joralemon, geol asst
Walter E Bauer, mine geol
R A Kuhlman, mine engr
Edwin Booth, elec engr
Harry P Walch, assy
Clark L Wilson, mine supt
Harry P Walch, assy
Clark L Wilson, mine supt
Wm A Muir, mine fore
250-tons prod daily

NEW QUINCY MINING CO
Secy: Mr Crandall, Felt Bldg, Salt Lake City
J I C MINE & WEST QUINCY MINE, Snake dist, Wasatch co, Cu, Pb, Ag

NORTH LILY MINING CO
Secy-treas: Rom Warburton, 620 Kearns Bldg, Salt Lake City
NORTH LILY MINE, Utah co, Pb, Zn
Under dev
TINTIC BULLION (Coyote) MINE, Utah co, Zn, Pb, Au, Ag

NORTH STANDARD MINING CO
39 Exchange Place, Salt Lake City
UNITED METALS MINES, Box Elder co, Pb

OPHIR DEVELOPMENT CO
Ophir
Pres & mgr: D C Gilbert
Mine at Ophir, Cu, Pb, Zn, Ag
(Leased to United States Smelting Refining & Mining Co)

ORO DEL REY
2035 S 17 East, Salt Lake City 5
Pres: Alma Tripp
VP: C J Tripp
ORO DEL REY MINE, 7 mi W of Callao, Tooele co, underground
A B Tripp, mine engr
Idle

PARK CITY CONSOLIDATED MINES CO
310 Kearns Bldg, Salt Lake City
Pres: Carl V Stehle
VP: Richard C Badger
Dir & secy: J A Howell
Gen mgr: John Kasteler, Salt Lake City
PARK CITY CON MINE, Park City, underground, Ag, Pb, Zn
Idle

PARK FLAG MINES CO
608 Walker Bank Bldg, Salt Lake City
Pres: Dewitt Van Evera
Secy-treas: Lincoln G Kelly
Mine at Park City, Au, Ag, Pb, Zn

PARK UTAH CONSOLIDATED MINES CO
1003 Continental Bank Bldg, Salt Lake City
Pres & dir: Lawrence Fox
VP, consult & dir: O W Friendly
VP, gen mgr & dir: P H Hunt
Treas-secy & dir: J Wm Stoner
Gen supt: G S Krueger & H C Wallace
Dir: W W Ray
Dir: Frank A Wardlaw Jr
Dir: C E Weed, New York City, N Y

PARK CITY, DALY & ONTARIO MINES, 3 mi SE & SW of Park City, underground, Pb, Ag, Zn
E A Hewitt, geol
Harry Dappler, mine engr
P O Reynolds, mech engr
David Thompson, elec engr
C W McCullough, safety engr
4,000 to 5,000 tons prod monthly

PENN UTAH MINING CO
O K MINE, Milford, Au, Ag, Cu

PLUMBIC MINES CO
39 Exchange Place, Salt Lake City
Pres: Paul H Hunt
Secy: D H Bullough
Mgr: J G Sargent
JEEPSTER MINE, Marysvale, underground, U

PROSPER MINING CO
Milford
Pres, gen mgr & purch agt: Alfred M Bealer
VP: John VanDyke
Gen supt: Leon B Cwulski
OLD HICKORY HARDROCK & OPEN PIT MINE, Au, Ag, Cu
Gotfrid Peterson, mine engr & supt
Karl Hutchins, mech engr
Deason & Nichols, assy
100-TON FLOT MILL
100-tons prod daily
Under dev

RAVEN MINING CO of UTAH
Roosevelt
Pres & gen mgr: Fred C Perron
VP & gen supt: R A Perron
FARIETTE MINE, 12 mi S of Myton, underground, Gilsonite
Ralph McMullin, mine fore
E B MINE, 45 mi SE of Vernal, underground, Gilsonite
Richard O'Neil, mine fore

RAY MINING & DEVELOPMENT CO
c/o Richard W Ray, 43 W 4th South, Salt Lake City
THIRD TERM MINE, Tooele co, Pb

ROBINSON, JOSH
(Lessee)
Fillmore
GALENA MINE, Cricket Mountain dist, Millard co, Pb
Under dev

ROYSTON COALITION MINES, LTD
Marysvale
Secy-treas: R A Glenny
KENNEDY GROUP at Marysvale, U
Under dev

SCHEELITE QUEEN MINE
Mgr: Duke Page
W

SHOWERS STANDARD MINING CO
Secy: W R Walker, 206 Boston Bldg, Salt Lake City
SHOWERS GROUP, Tintic dist, Juab co, Au, Ag

SILVER HORN MINING CO
1024 1st Ave, Salt Lake City 3
Pres: Dr E A Hunt
Gen mgr: L B Glafcke
Dir: W H Sprunt
Underground & Open-pit, Au, Ag, Cu, Pb

SILVER KING COALITION MINES CO
1010 Kearns Bldg, Salt Lake City
Pres: Thos F Kearns
VP & gen mgr: James Ivers
Mgr of oper: M G Heitzman
Purch agt: John F Flanagan
SILVER KING MINE, Park City, underground, Au, Ag, Cu, Pb, Zn
Theo Smith, mine supt
William Shea, mill supt
J H Winwood, Jr, engr
F M Stone, mech & elec engr
Thomas Grose, assy
800-TON FLOT MILL
2,900 to 4,000-tons prod monthly

SILVER LEAF MINING CO
Pres: M A Bourne, 1919 Yale Ave, Salt Lake City
SILVER LEAF MINE, American Fork dist, Utah co, Zn, Pb, Ag

SILVER SHIELD MINING & MILLING CO
704 Newhouse Bldg, Salt Lake City 1
Pres: Mary Kyto
Gen mgr: L E Stein
Secy-treas: C Morris
Dir: Rose Morris
WANAKA MINE, Ouray, Colo, underground, Au, Ag, Cu
Under dev

SILVER STANDARD MINING CO
606 National Savings & Trust Bldg, Salt Lake City
Pres: L N Ellsworth
Dir: Ernell Jensen
SILVER STANDARD MINE, Lakes of Killarney Group, underground, Au, Ag, Pb, Co
Under dev

SILVER STAR MINING CO
Adamsville
Mgr: M Evans
BEAVER VIEW MINE, Au, Ag, Pb, Zn, e
Bob Glenny, mine supt
W H Evans, asst mine supt
Scot Cuttler, mine fore
100-tons prod monthly

SNOW, KENNETH
Jensen
CLAIMS, 7 mi E of Jensen, U
Under dev

SPIDER URANIUM MINING CO, INC
Calleo, Utah
J W McAffee, Arimo, Idaho
H P Bertelson, Marysvale
Freeman L Thomas, Pocatello, Idaho
O F Baur, Pocatello, Idaho
CLAIMS near Calleo, U, under dev

SPOR, GEORGE P & SONS
Delta
FLUORIDE MINE, Delta, underground, open-pit, Fluorspar
Under dev

STANSBURY CONSOLIDATED MINING CO
Box 804, Grantsville
Pres: E C Berry
VP & supt: C D Bennett
Secy: R C Gehrig
Ag, Cu, Pb, Zn, Fe
Under dev

STAR DUST MINES, INC
Gold Hill
Pres & gen mgr: Fred Cook
Secy-treas: R D Pomeroy
Underground & open pit operation, e
Under dev

STOCKS, D S
(Lessee)
Marysvale
GREAT WESTERN MINE, Piute co, Pb

TINTIC LEAD CO
27 Stock Exchange Bldg, Salt Lake City
Pres: Paul H Hunt
Secy-treas: D H Bullough
Mine near Milford, Au, Ag, Pb
Operated by lessees

TINTIC OUTPOST MINING CO
825 S 10th East St, Salt Lake City
Pres & gen mgr: J M Calderwood
VP: Sam Hamilton
TINTIC OUTPOST, Au, Ag, Pb, Zn, Fe
Under dev

TINTIC STANDARD MINING CO
1114 Walker Bank Bldg, Salt Lake City
Pres: H E Raddatz
Gen mgr & treas: M D Paine
Secy: Glen Hardy
Directors: Roy M Jacobs, Harriet D Travis & Albert E Becker
TINTIC STANDARD MINE, Dividend, Au, Ag, Cu, Pb
Idle

TREASURE HILL MINES CO
510 Felt Bldg, Salt Lake City
Pres: O W Moyle
TREASURE HILL MINE at Stockton, Au, Ag, Cu, Pb
G D Wakefield, mgr
Frank D Sayler, mine supt
Under dev

TROUTT, LEE R, CO
Callao
Gen mgr: Lee R Troutt
Dir: M A Lindner
ORO DEL RAY MINE, Callao, underground, Au, Ag, Pb
Prod from dev

UNDINE LEASING CO
c/o Roland Gillespie, Mammoth
WINDRIDGE NUMBER 2 & WINDRIDGE LODE, Undine, Tintic dist, Juab co, Au, Ag

UNITED STATES GYPSUM CO
300 W Adams St, Chicago 6, Ill
(for Officers, see Calif listing)
Underground Gypsum mine at Nephi, open-pit, gypsum mine at Sigurd

UNITED STATES SMELTING REFINING AND MINING CO
75 Federal St, Box 2137, Boston 6, Mass
Pres: F S Mulock
WESTERN OPERATIONS, Newhouse Bldg, Box 1980, Salt Lake City 10, Utah
VP & gen mgr, West operations: W C Page
Mgr of West Mines: A G Kirkland
Asst to mgr of West mines: Byron E Grant
Mgr U S stores dept: C A Johnson
UTAH OPERATIONS, U S & Lark Mine, Bingham dist, Pb, Zn, Cu
Max M DuBois, gen supt, U S & Lark Mine
J M Erborn, supt, U S section
Benton Boyd, supt, Lark section
Hugo L Johnson, mgr Midvale pl, flot mill & lead smelter
R A Pallanch, supt, Midvale Mill
C A Nelson, supt, Midvale Smelter

U S URANIUM MINING CO
Monticello & Moab
Pres: Emanuel Lester
CLAIMS, S of Monticello, U

UTAH ALLOY ORES, INC
Thompson, V
Gen mgr: R D Nye
Chas Cate, mine fore

UTAH CENTRAL MINES CO
508 E 13th South, Salt Lake City
Gen mgr: F J Sylvester
Secy-treas: F G Higenbotham
MINE near Lucern, Ag, Pb, Under dev

UTAH GALENA OIL CORP
184 E 5th North St, Provo City
Pres & gen mgr: Ben H Bullock
VP & gen mgr: B Vern Bullock
Secy-treas & dir: J Wallace Benwell
Underground mine 6 mi N of Eureka
George H Hansen & Kenneth Bullock, geol
Under dev

UTAH MINES GROUP
1358 Glenmare St, Salt Lake City
Owner: Edwin O Woolley Jr
Mines near Fish Springs, Au, Ag, Cu, Pb
Zn, Fe

UTAH QUEEN LODE & MOYLAN LODE MINES
1709 Kearns Bldg, Salt Lake City
Owner: Mary E N Bradley
Owner: Marguerite M Graham
Mgr: George J Gibson
Mine in Ophir Mng Dist
Under dev

VANADIUM CLAIMS
Blanding, V, U
Owners: Lee & Harris Shumway & A E Seth
Under dev

VANADIUM CORP OF AMERICA
420 Lexington Ave, New York, N Y
(For officers see Colo listing)
MINES at Marysvale
W Wittmeyer, supt
PROSPECTOR MINE & FREEDOM #1 & 2 MINES,
near Marysvale, underground, U
Under dev
MINES at White Canyon near Hite
50-TON PILOT PL at White Canyon, Cu, U

VICTOR CONSOLIDATED MINING CO
Secy-treas: Rom Warburton, 820 Kearns
Bldg, Salt Lake City 1
VICTOR GROUP, Tintic dist, Juab co, Au, Ag

WAH-WAH MINING CO
404 Dooly Bldg, Salt Lake City
Pres & dir: James H Dugdale
VP & dir: Edward P Richards
Secy-treas: E A Laughlin
MINE at Beaver, Pb, Zn, Idle

WARD LEASING CO
1956 Princeton, Salt Lake City
Pres & gen mgr: L N Rasmussen
BLACK BOY MINE, Joy, Mn, Fluorspar
D J Price, mine supt
Frank Walthall, engr
H R Fisher, engr
Under dev

WASATCH MINES CO
211 Stock Exchange Bldg, Salt Lake City
Secy-treas & gen mgr: A J Selander
FLAGSTAFF & WASATCH MINE at Alta, Au,
Ag, Cu, Pb

WEST PARK MINING CO
Rm 9, 8 Center St, Provo
Pres: Joseph H Petersen
Gen mgr: Arvil H Scott
Purch agt: Leon Newren
Property located in Snake Creek dist,
Wasatch co, underground, Au, Cu
Under dev

WESTERN GYPSUM CO
Salt Lake City
Pres: S H Ellason
Gen mgr: R D Hess
Dir: W S Mole
Purch agt: E L Hildebrand
Mine at Sigurd, open-pit gypsum
400-tons prod daily

WORTLEY, G W
Box 289, Park City
ATKINSON TAILINGS, Uintah dist, Summit co,
Pb, Ag

YANKEE CONSOLIDATED MINING CO
Secy-treas: Rom Warburton, 921 Kearns
Bldg, Salt Lake City
YANKEE MINE, Utah co, Au, Ag, Cu, Pb, Zn

WASHINGTON

AAVEDSRUD & WELLEN
Box 385, Coulee City
KELLY CAMP MINE, Ferry co, W
Under dev

ADMIRAL CONSOLIDATED MINING CO
409 American Legion Bldg, Spokane 8
Pres: O L Hood
VP: Elsa P Brunelle
Secy-treas: Mrs J Richard Brown
Dir: H A Smith
Gen mgr: John Colby
ADMIRAL CONSOLIDATED MINE at Northport,
Ag, Pb, Zn
75-TON FLOT MILL
Fred Williams, met
Under dev

ALDER GOLD-COPPER CO
405 Realty Bldg, Spokane 8
Pres: E Royce
VP: J L Magney
Secy: R K Magney
ALDER MINE at Twisp, underground & open
pit, Au, Ag, Cu, Zn
Harvey F Stone, mgr
300-TON FLOT MILL
Prod: 300 tons daily

AMERICAN CHROME & MAGNESIUM INDUSTRIES, INC
1301 Terminal Sales Bldg, Seattle 1
Pres: A H Wild
CHROME PLANT at Anacortes, Metallurgical
briquets

AMERICAN GRAPHITE METALS CORP
Box 123, Yakima
Pres: C H Douglass
Gen mgr & purch agt: E R Thoma
Purch agt: F B Satterlee
MINE at Omak, Flake graphite
W A Blankenship, mine supt
50-100 TON GRAV FLOT MILL
Floyd Satterlee, mill supt
H Lambert, met & assy
5 ton daily prod

AMERICAN SMELTING & REFINING CO
(For officers, see Northeastern listing)
TACOMA PLANT
Copper smelter, converter, refinery &
arsenic refinery plant
E R Marble, mgr
P T Benson, gen supt
William Fahey, ch mech engr
E S Pierce, purch agt

AMERICAN ZINC, LEAD & SMELTING CO
920 Old National Bank Bldg, Spokane 8
Pres: Howard I Young, St Louis
Western mgr: Dale I Hayes
GRANDVIEW MINE at Metaline Falls,
underground, Pb, Zn, Ag
Ben L Coomes, purch agt
H F Mills, gen supt
John W Currie, mine supt
Claude L Sage, mine fore
M W Scott, ch engr
Ray Gilbert, master mech
700-TON FLOT MILL
Homer P March, mill supt
Delos P Underwood, met
Prod: 800 tons daily

ANACONDA COPPER MINING CO
25 Broadway, New York 4, N Y
(See Montana listing for officers)
BONANZA LEAD MINE, Box 111, Colville, Ag,
Pb
Partner: I M Hunley
Partner: E B Gibbs
John De Graff, mine supt
N D Lindsley, ch engr
DEE DOMINION MINE, Ag, Pb, Zn
50-TON MILL at Palmers
Ray J Jeffrey, mill supt
W S Hardy, met

ARK MINE
Stevens co
J Davidge Warfield, 14803 Milverton Road,
Cleveland 20, Ohio
David Munsell, Box 346, Kettle Falls
Ag, Pb, Zn Cu
50-TON MILL
Under dev

BALTIMORE MINES, INC
314 Virginia St, Seattle
Chairman: Ralph A Younkin
Pres: E C Lingafelter
VP: Lester A Lough
Secy-treas: Della Pennicott
Gen mgr & purch agt: E A Carlisle
BALTIMORE MINE near Mazama in Slate
Creek mining dist, Winthrop, under-
ground, Au, Ag
George B Johnson, engr
Under dev

BEAR BASIN MINING CO, INC
641 N Callow Ave, Bremerton, Wash
Pres & gen mgr: Edwin R Saurers
Secy, mast mech & purch agt: Carl L
Johnston
Treas: Harry L Winkley
BEAR BASIN MINE, Box 23, North Bend, Au,
Ag, Cu, Pb, Zn, Mn, Mo
Olin M Sprague, engr
Edward Hall, mine fore
FLOT MILL
Bob Crippin, mill fore
Under dev

BEDROCK PLACERS
1833 13th Ave, Seattle
Pres: D H Wells

BIG DOME MINING CO
Kittitas co
Pres: Oscar Johnson, 104 12th Ave North,
Seattle
Secy-treas: Wm Petroborg, 822 W 70th St,
Seattle
Cu, W
Under dev

BIG LAKE MINING CO
629 Peyton Bldg, Spokane
Pres: Will Everett
MINE SW of Kettle Falls, Ag, Pb
John J Stalick, supt
Under dev

BLACK WARRIOR MINING CO
1306 Old National Bank Bldg, Spokane
Pres: Frank Funkhouser
Secy-treas: Robert A Gane, Jr
Dir & mine mgr: Howard Harris, Stehekin
BLACK WARRIOR MINE, Pb, Zn, Cu, Ag
Under dev

BLISS, WALTER S
Orient
KETTLE RIVER PROPERTY, Stevens co, Pb,
Zn, Cu
Under dev

BLUE BELL GOLD MINING CO
1525 Pacific Ave, Tacoma
(Mutual Industries, Ltd, lessees)
Gen mgr: A H Draughon
MINE in Summit dist, Pierce co, Au, Ag
Cu, Zn

CALTON MINING CO
Pres: Ray C Avons, Rt 1, Leavenworth
POLE PICK MINE, Chelan co, Au
(leased from Gold Bond Mining Co)
Under dev

CARDINAL, FELIX J
500 Norfolk Bldg, Spokane
LEAD TRUST PROPERTY, Stevens co, Pb
(leased from Ray Cater, Marlin)
Under dev

CASCADE MINING CO, INC
Skykomish
Pres & gen mgr: Henry E Trenk
VP: Richard C Rochester
Secy-treas: Arthur Becker
ACES-UP MINE, connecting with Cleopatra
Mine, 4 mi SW of Skykomish, underground,
Ag, Pb, Zn
Robert K Smith, geol & assy

CHEWALAH EAGLE MINING CO
Chewelah
Pres: Dr D P McPherson
MINE in Stevens co, Cu
Under dev

CHINOOK MINING CO
c/o H C Lawson, R R 1, Prosser
Partner: O Smalley
Partner: H C Lawson
TIP-TOP MINE, underground, Au, Ag, Cu
Under dev

COLE, ROBERT J
1933 Blenheim Drive, Seattle 2
LONE JACK MINE, 20 mi NE of Glacier,
underground, Au, Ag
Under dev

COLUMBIA LEAD & ZINC MINING CO
502 Hyde Bldg, Spokane
Pres: Harry Homad
VP: Raymen Paulson
Gen mgr: H B Johnston
Gen supt & geol: Everett Hougland
Zn, Pb
Under dev

COLUMBIA TUNGSTEN CORP
Cedonia
MINE near Cedonia, underground, W
Under dev

COMSTOCK MINE
Orient, Clugston Creek dist, Stevens co
Supt: Les Gourlay
Cu, Pb, Zn
Under dev

CONSOLIDATED MINES & SMELTING CO, LTD
Box 66, Kenmore
Pres & gen mgr: O B Brown
Treas: D M Gellatly
FIVE PROPERTIES at Keller, Ferry co,
underground & open pit, Cu, Pb, Zn, Ag,
Au
Oscar Magnuson, mine fore
Under dev

CONSOLIDATED SPECULATOR CORP
c/o Mr & Mrs S W & Joseph Zoldok,
12 E 27th Ave, Spokane
Pres: Joseph M Zoldok
VP & gen mgr: Stephen W Zoldok
LUCILLE MINE, 2 mi N of Leadpoint,
underground, Zn, Pb, Ag, Cd
Under dev

DAVIDSON, ROY & LEE WOODS
Box 346, Colville
GALENA KNOB PROPERTY, Stevens co, Pb, Ag
Under dev

DEAN, JAMES P
Rt 4, Box 270, Olympia
FRISCO STANDARD MINE, Stevens co, Ag, Cu,
Pb
Exploration

DEER TRAIL MINES
Fruitland
Lessee: Mac Slate, Albany, Oregon
UNDERGROUND MINE, Ag, Pb
FLOT MILL
Under dev

EAGLE MOUNTAIN MINING CO, THE
716 Old National Bank Bldg, Spokane
Pres: Conrad Wolfe
Secy-treas: Phillip P Skok
UNITED COPPER MINE, near Chewelah, under-
ground, Cu, Ag, under dev

INDEPENDENCE-KEYSTONE MINE, underground,
Cu, Ag, under dev
AMAZON MINE, underground, Cu, Ag
Under dev

FLAG HILL MINES CORP
220 Security Bldg, Olympia
Pres: Henry Skinner, Rt 10, Box 510,
Olympia
VP: Glenn Ross, Moses Lake
Secy-treas: W R McDougall
Dir: H C Skinner
Dir: A H Blocher
MINE, Republic, underground, Au,Ag, Idle
G H Thayer, fore, Box 511, Republic
SCALAWAG & C O D CLAIMS, Au,Ag, under dev

GERMANIA CONSOLIDATED MINES, INC
416 Empire State Bldg, Spokane 8
Pres: Roy D Fromm
VP: Julius A Franz
Secy-treas: E I Fisher
Gen mgr: H G Loop
KEETH MINE at Hunters in Stevens co,
underground, W
GRAV MILL
Under dev

GLACIER SILVER LEAD MINING CO
514 Columbia Bldg, Spokane 8
Pres: Charles J Keller
VP: H E Major
Secy-treas: F W Kiesling
MINERAL HILL, LONDON & SURSER MINES on
Mineral Hill, Ag, Cu, Pb, Zn
Under dev

GLADSTONE MOUNTAIN MINING CO
202 Radio Central Bldg, Spokane
Lessee: W L Clearwaters, Millwood
Pres: J S Ramage
VP & mgr: W J Nicholls
GLADSTONE MINE at Leadpoint, Pb, Ag

GOLD BOND MINING CO
514 Columbia Bldg, Spokane 8
Pres & gen mgr: Frank Lilly
VP: H D Hackney
Secy-treas: F W Kiesling
Dir: F L Engard, Jr
Dir: B G Bonner
POLE PICK & OLYMPIA MINES, Ag, Au
FLOT MILL

GOLDFIELD CONSOLIDATED MINES CO
Box 2520 or 205 N Virginia St, Reno, Nev
Pres: George Wingfield
Secy: Geo M Spradling
VP & gen mgr: E A Julian, 1 Montgomery St
San Francisco
VP & dir: T L Wilcox
VP & dir: Wm Woodburn
VP: W A Swan
Dir: M Rice
ANDERSON MINE, Stevens co, open-pit,
Pb, Zn
DEEP CREEK MINE, Zn, Pb, Ag, Cu
T Higginbotham, Colville, Res mgr
SIERRA ZINC MINE, Zn, Pb
225-TON FLOT MILL

GRANDVIEW MINES, INC
601 Realty Bldg, Spokane
Pres & dir: Karl W Jasper
VP: Paul L Hoetzel
Secy-treas, & dir: E K Barnes
Dir: Fred Trumbull
Dir: E O Dressel
Dir: John Roberts
GRANDVIEW MINE 9 mi NE of Metaline Falls,
underground, Zn, Pb
(leased to American Zinc, Lead & Smelting
Co, St Louis, Mo)
FLOT MILL

GREAT LAKES CARBON CORP
18 East 48th St, New York, N Y
Pres: George Skakel
Gen mgr: C A Frankenhoff
Asst gen mgr: E T Frankenhoff
Prod mgr: McKinley, Stockton
TALITE DIVISION, 756 South Broadway,
Los Angeles 14
D F Dyrsmid, ch engr
PLANT #4, Kittitas
C F Schuholz, mill supt

GREGOR MINES, INC
552 Skinner Bldg, Seattle 1
Pres: George A Meagher
Mgr: Paul Sorenson, Box 188, Colville
YOUNG AMERICA MINE, Stevens co, Pb, Zn, Ag
100-TON FLOT MILL

HI-CLIFF MINE
Stevens co
J Davidge Warfield, 14803 Milverton
Rd, Cleveland 20, Ohio
David Munsell, Box 346, Kettle Falls
Pb, Zn, under dev
(see also Ark Mining Co)

HIDDEN TREASURE MINE
c/o Norman D Lindsley, Box 452, Chelan
Owner: Howard Baker
Owner: J Baker
Owner: Norman D Lindsley
Au, Ag, Cu, Pb
Under dev

HIGHLAND MINING & MILLING CO
1008 S Sprague St, Tacoma
Pres & mgr: M Slabodnik
Secy-treas: V D Barkley
MINE in Squaw Creek Mining dist, Au, Zn
Under dev

HORINE, GEORGE
Adair
LEWIS DAM MINE, Au, under dev

HORSESHOE BASIN MINING & DEVELOPMENT CO
245 4th St Bldg, Bremerton
Pres, treas, gen mgr: Martin A Morrison
Dir: Robert A Nuske
MINE in Chelan co at Stehekin, underground, Au, Ag, Cu, Pb, Zn, W
Ray Sherwood, mine fore
N D Lindsley, engr
Dale Joliffe, mech engr
50-TON FLOT MILL
Under dev

HOWE SOUND CO
Chelan Division, Holden
Pres: H H Sharp, New York City
Treas: E Richter, New York City
HOLDEN MINE, Cu, Au, Zn, Ag
J J Curzon, mgr, Holden
W E Taylor, purch agt
John Bley, mine supt
C L Hicks, mine fore
W S Phillips, engr
H J Siemmer, mech & electrical engr
A Bunde, electrician
2,000-TON FLOT MILL
V A Landon, mill supt
J S Mitchell, met
W Tooke, assy

IMPERIAL MINE
Mazama dist, Okanogan co
Operators: Manlon McCain & Jack Stewart, Mazama
Au, Ag, Cu
Under dev

INDEX MINING CO
2430 Monte Vista Place, Seattle 99
Mgr: C V Brennan, Jr
SUNSET COPPER MINE, in Snohomish co, underground, Au, Ag, Cu
150-TON FLOT MILL
Under dev

JIM CREEK MINES, INC
Ione
JIM CREEK MINE 6 mi NW of Ione, underground, Pb, Ag, Zn
Under dev

JOHNSBURG MINING & MILLING CO
Mount Vernon
Pres: C O Davis
MINE in Cascade dist, Skagit co, Ag, Pb
Under dev

KAABA SILVER LEAD MINES, INC
Nighthawk
Pres: A W Webster, 1211 Pine St, Seattle
Gen mgr, secy-treas & purch agt: Lee B Carroll, Nighthawk
KAABA MINE, underground, Ag, Cu, Pb, Zn
Arthur Peterson, mine supt
300-TON SINK-FLOAT at FLOT MILL
Prod: 275 tons

KEEGAN MINING CO
First & Mission Streets, Wenatchee
Owner: J J Keegan
GOLD KING MINE, underground & open pit, Au, Ag
E H Lovitt, engr
Wm Cox, mine fore
CYANIDE FLOT MILL
Prod: 2-3 cars daily
Dolomite at calcium carbonite limes, fire clays, brick clays, silico sands at Entiat, Riverside, Wenatchee (owned by Keegan Bros)
J J Keegan, engr
Wm Savage, mine fore

KEOKUK ELECTRO-METALS CO
Pres: G L Weissenberger, Keokuk, Iowa
VP: L E Ottmer, Box 361, Wenatchee
BUCKHORN IRON MINE, Okanogan co
KULLER IRON MINE, Stevens co
L E Rosser, pl mgr, Wenatchee
Under dev

KNOB HILL MINES, INC
206 Sansome St, San Francisco
Pres: A D Stewart
VP & mgr: Walter Lyman Brown
Secy: H N Kuechler, Jr
Mgr: A R Patterson
KNOB HILL & MOUNTAIN LION MINES, Republic, underground, Au, Ag
James E Davis, mine supt
Ben Richards, mine fore
Tom L Pittman, engr
Elmo Blain, electrician
400-TON FLOT MILL with cyanidation of tailings
Louis Lembeck, mill supt
Andrew J Fergus, assy
Corwin L Cooper, met

KROMONA MINES, INC
702 Lloyd Bldg, Seattle
Pres & gen mgr: J F Krom
VP: J F Brand
Secy-treas: George Wizer
Dir: Wm L Weigand
Dir: H B Schock
KROMONA MINE, 19 mi NE of Sulton, Snohomish co, Au, Ag, Cu, Mo
100-TON FLOT MILL
Under dev

LAKE SERENE MINING CO, INC
Pres: Frank Waugaman, Snoqualmie
VP: Hector Brown
Secy-treas: Mrs Hazel Waugaman
GILBUR-INDEX MINE, 3 mi S of Index, underground, Ag, Cu
Under dev

LASOTA, F P
Northport
BROMIDE MINE, on Aladdin Mountain, Pend Oreille co, Ag
Under dev

LAST CHANCE CONSOLIDATED MINES, INC
405 Realty Bldg, Spokane
Pres: W E Cullen, Jr
Gen mgr: J L Magney
Secy & purch agt: Roy K Magney
Treas: E H Blaesser
LAST CHANCE, GREAT WESTERN & BLACK ROCK MINES, Northport, Pb, Zn, Ag
Arthur Magney, asst mine supt
60-TON GRAV FLOT MILL

LAUCKS CHEMICAL CO
1009 Western Ave, Seattle 4
Pres: J T Laucks
VP: F P Owens
Secy: G O Freeman
Purch agt: B White
TONASKET DIVISION MINE, 6 mi NW of Tonasket, open pit, gypsum, epsom salts
H W Cool, gen mgr
Prod: 150 tons daily

LEAD POINT ELECTRIC MINING CO
Pres: George Humiston, 1373 W Compton Blvd, Compton, Calif
ELECTRIC POINT MINE, Stevens co, Ag, Pb
240-TON GRAV MILL

LEYBOLD & SCALES, INC
621 East 11th St, Tacoma
MOLLY PROSPECT, Mazama dist, Okanogan co, Cu, Au, Ag
Under dev

LITTLE NOISY PROSPECT
Ione
Owners: I E Boswick & A Krantz
UNDERGROUND MINE, Au, Ag, Pb, Zn, W
Under dev

LONE STAR LEASE
Conconully
Gen mgr: T D French
Pb, Zn, Ag
Under dev

LONE STAR MINE
Mazama
Owner & mgr: Tom Luke
Au, Ag
Under dev

LOVITT MINING CO, INC
Box 862, Wenatchee
Pres & gen mgr: E H Lovitt
VP: Vere McDowall
Dir: F C Buckland
Gen supt: D Winans
GOLDEN KING MINE, Chelan co, underground, silica, Au, Ag
Charles Stumpf, mine fore
A C Skerl, geol
SMELTER
W G Thomson, assy
Prod: 200 tons daily

LUCKY BOY MINE
Springdale
Owner: C F Allen
Ag, Cu
Under dev

MAGNUSEN, FRED
Index
BROKEN RIDGE PROPERTY, Snohomish co
Cu, Ag, Au
Under dev

MEADOW CREEK MINING CO
S 328 Fiske, Spokane 15
Pres: D A Monroe
Secy-treas: Mrs Wayne Richards
MINE in Ferry co, Cu, Ag, Au, Mo
Under dev

METALINE CONTACT MINES
(Part of properties leased to Metaline Mining & Leasing Co)
c/o Stanley A Easton, Pres, Kellogg, Idaho
VP: N E Hawley, Wallace, Idaho
Secy-treas: M Toules, 1231 Old National Bank Bldg, Spokane
Pb, Zn

METALINE MINING & LEASING CO
801 Realty Bldg, Spokane
Pres & gen mgr: James L Leonard
VP: Karl W Jasper
Secy-treas: E V Barnes
Purch agt: Robert Small
MINE at Metaline Falls, Pb, Zn
Cline Tedrow, mine supt
250-TON FLOT MILL

MILTON & HATHAWAY
Box 41, Curlew
GOODNOUS CREEK PLACER, Ferry co, Au
Under dev

MINERAL CENTER MINING CO, INC
1605 28th Ave, Seattle
Pres: C F Wiksten
VP: E R Neighbor
VP: C T Fezzey
Secy: P R Screven
Treas: B S Hewitt
Dir: E J Harting
Dir: L H Saunders
MINE, NE of Index, in Silver Creek dist, Cu, Pb, Zn, Au, Ag, Idle
H E Hewitt, engr

MINES MANAGEMENT, INC
Chronicle Bldg, Spokane
Pres, gen mgr & purch agt: W R Green
VP: W T Anderson
Dir: L Howe
ADVANCE MINE, 6 mi S of Northport
IROQUOIS MINE, 3 mi NE of Leadpoint, underground, Zn, Pb, Ag
Frank Paparich, Jr, mine supt
R S Williams, mine engr
P E Oscarson, geol

MODERN GOLD DREDGING CO
c/o Lee Eller, 1010 W Boone Ave, Spokane

MOONLIGHT MINING CO
c/o Tuttle Main Service Station, Colville
Pres: A E Wilkerson
MORNING MINE, in Northport dist, Stevens co, Zn, Pb, Ag
Under dev

MORRIS & LEIGHTON
Evans
YOUNG AMERICA MINE, Ag, Pb, Zn
W C Morris, mgr
B F Melby, mine fore
30-TON FLOT MILL

MOUNT RAINIER MINING CO, INC
Gen del, Seattle 1
Secy-treas: Thor Oakland
MINE in Mount Rainier dist, Pierce co, Cu
Under dev

MULLEN, ELMER
Chewelah
MONTGOMERY PROSPECT in Chewelah dist, Pb, Zn, Cu, Ag, Au
Under dev

NORTHPORT MINING & DEVELOPING CO
1255 E Glass St, Olympia
Pres: F Marcoe
VP: Charles Wells
Secy-treas: A E Hankins
FRISCE STANDARD MINE, near Ione, Ag, Cu
Under dev

NORTHWEST MAGNESITE CO
Chewelah
Pres: E A Garber
VP: C A Sargent
Gen mgr: H A Ziebell
Purch agt: L A Knight
Gen supt: Roger L Fisk
RED MARBLE MINE, 20 mi SW of Chewelah, open pit, Magnesite
Lloyd King, John Estes, mine fore
Gene Kerns, mine engr
PLOT & HEAVY MEDIA MILL
Ted Morton, mill supt
Milton Carr, mill fore
Chester Rhodes & L J Bassett, mill shiftbosses
REDUCTION PLANT

OLSON, CARROLL S
Box 324, Orient
BLUE MOUNTAIN MINE, Ferry co, Pb, Zn
Under dev

ORIENT-EUREKA MINE
Orient
Gen mgr: H C Topping
MINE, 6 mi N of Orient, Au, Ag, Pb, Zn
Under dev

PACIFIC MINING CO, INC
642 Central Bldg, Seattle 4
Pres & gen mgr: Gard B Kennedy
VP: Chas A Shadel
PACIFIC MINING CO is 14 mi N of Deer Park, underground, W (Hubnerite)
GRAV MILL
Albert Hale, geol
Willis Ott, assy

PACIFIC MUTUAL SILVER LEAD CO
Box 1805, Spokane
Pres: C A Lyon
VP: M C Yeager
Secy-treas, gen mgr, purch agt: C A Gray
ADDISON MINE, 11 mi SE of Keller, Ferry co underground, Au, Ag, Cu, Pb, Zn, W
Barclay O Goodsell, mine engr
C M Fassett & Co, assy

PACIFIC NORTHWEST ALLOYS
Mead
Pres: Leo H Timmins
MAGNESIUM PLANT at Mead

PEND OREILLE MINES & METALS CO
923 Old National Bank Bldg, Spokane
Ch of bd: Stanley A Easton
Pres: Lewis P Larsen
Gen mgr: W L Ziegler
Secy-treas: Jens Jensen
Asst secy-treas: E W Mortimer
Purch agt: R G Walker
MINES at Metaline Falls, Zn, Pb, Ag
C A R Lambly, gen supt
Lynn Kinney, mine supt
L G Billings, mine fore
Arthur F Betchart, engr
Steve Rogich, master mech
750-TON FLOT MILL
J C Crampton, mill supt
Robert W Townsend, assy
Ralph Bontrager, ch operator of power
Prod: 650 tons daily

PRIESTLEY MINING & MILLING CO
1706 Smith Tower, Seattle 4
Pres: Paul Blomberg
LENNOX MINE, King co, Au, Ag, Zn, Cu
Under dev

QUINCY CORP
901 Chrysler Bldg, New York 17, N Y
Pres: C A Frankenhoff
VP: A G Frankenhoff
DIATOMITE MINE in Grant co
C V O Hughes, pl mgr, Quincy

RED TOP MINING CO
Northport
Pres: S I Serigstad
VP: E A Pearson
Dir: Mary Perry Brown
Gen mgr, purch agt & mine fore: John Colby
RED TOP MINE, 8 mi NE of Leadpoint, underground, Zn, Pb, Ag
FLOT MILL
Limited dev

RUDEBECK, HARRY
Index
FLORENCE RAE MINE, Snohomish co, Cu, Ag
Under dev

SAGINAW GOLD & COPPER MINES
Bellingham
Pres: R L Averill
SAGINAW MINE, Au, Cu, under dev

SCOTT & SMITH
Carlton
BALES ANTIMONY PROPERTY, Okanogan co, Sb
Under dev

SEATZEN & MOOREHEAD
Colville
Partners: Wm Seatzen & Ross Moorehead
GOLD REEF MINE, Kettle Falls, underground, Au, Ag
Under dev

SILVER COIN MINING CO
Lot 1, Lake Stevens
Emmett Loth & Associates
MINE in Snohomish co, Au, Ag, Pb, Cu, Zn
Under dev

SILVER KING PROSPECT
Mazama dist, Okanogan co
Owner: Alva Sharp, Mazama
Au, Cu, under dev

SILVER STAR MINING CO
Tonasket
Pres & gen mgr: Edward Rowan
VP: B H Branch
SILVER STAR MINE near Tonasket, underground
Under dev

SILVER TRAIL MINE
Clugston Creek dist, Stevens co
Partners: Robert Ramser, A B Sylvester, Orville Dilly, Frank Schwank, W I Ramser & Francis Carrol
Ag, Pb, Zn, under dev

SKAGIT TALC PRODUCTS
SOAPSTONE & FLAKE MICA MINE in Skagit co

SLATE CREEK MINING CO
145 Horton St, Seattle
Pres: Harry Kramer
VP: M S Alexander
CLAIMS in Slate Creek, Whatcom co, Au, Ag
MILL, 100-tons prod daily
Under dev

SPOKANE MOLYBDENUM MINES, INC
745 Peyton Bldg, Spokane
Pres: Luke G Bayley
MINES in Egypt dist, Lincoln co, Mo, Au, Ag, under dev

SPOKANE PORTLAND CEMENT CO
724 Old National Bank Bldg, Spokane
Pres: Walter B Neill
VP: G M Bell
Secy: Dwight D Hartman
LIMEROCK QUARRY, Marble, open pit, limestone, shale
NAPOLEON MINE, 130 mi N of Spokane, underground, shale, iron ore
F W Sandoz, mine supt

SULLIVAN MINING CO
Box 320, Wallace, Idaho
(For officers, see Idaho listing)
METALINE CONTACT MINE, Metaline dist, underground, Zn, Pb, under dev

SULTAN BASIN MINING CO
Sultan
Pres, gen mgr: G G Startup
Secy-treas: George Heald, Sultan
Cu, Ag, Au
Robert Curtiss, mine supt
Under dev

SUPER CHROME COMPANY
118 Commercial St, Bellingham
Pres: J H Stine
VP: Lyle Taylor
MINE E of Everson, Cr, under dev

TALISMAN MINING & LEASING CO
Peyton Bldg, Spokane
Pres: Henry T Born
TALISMAN MINE, Laurier, underground, Ag, Cu, Pb, Zn
100-TON FLOT MILL
Under dev

TOGO-TURK MINES
Fruitland
Owners & Operators: J W Lower & J W Greisbauer
Gen supt: C E Lower
TOGO & LUCKY BOY MINES, 6 mi E of Fruitland, underground, Cu, Ag
50-TON FLOT MILL
Prod: 50 tons ore

TUNGSTEN MINING & MILLING CO
711 Hutton Bldg, Spokane
Pres: H C Cooper
Secy-treas: O G Whitham
DENMARIA MINE, Stevens co, W
Under dev

UNITED COPPER MINES CO
10 S 3rd St, Yakima
Pres: A M Conway
MINE near Chewelah, Ag, Cu
Chas Delk, mgr
Under dev

UNITED STATES GYPSUM CO
(For officers, see Calif listing)
300 W Adams St, Chicago 6, Illinois
OPEN PIT MINE at Evans, limestone

UTILITY MINING CO
Sahe & Silverton, Snohomish co
Pres: M Baharah
MACHINAW GROUP
Au, Cu, Mi
G D Taft, gen mgr
D M Taft, mech engr
PLOT MILL
Wm McCarty, met
Under dev

VELMA MINES
515 Malaga St, Wenatchee
Pres & gen mgr: L G Olds
VELMA MINE, Wenatchee, open pit, Au, Ag, Hg
Under dev

WASHINGTON METEOR CO
Blewett
SILVER MINE, under dev

WHITMAN, JOHN W
703 Seaboard Bldg, Seattle (Lessee)
CONEY BASIN MINES in Miller River dist, King co, Au Ag Cu, Pb, Zn
Under dev

WYOMING

AMERICAN COLLOID CO
Merchandise Mart Plaza, Chicago 54, Ill
Pres: Paul Bechtner
VP: Wm D Weaver
Purch Agt: Roy H Harris
Ch chemist: Arthur G Clem
COLLOID MINE, 8 to 30 mi NW of Upton, placer, Bentonite
MILL
Orville Horn, mine & mill supt
BELLE MINES, 10 to 20 mi NW of Belle Fourche, So Dakota in Crook co, Wyoming, placer, Bentonite
MILL
Edwin Busfield, mine & mill supt
Prod: 110,000 tons per annum of Bentonite

BAROID SALES DIVISION, NATIONAL LEAD CO
930 Ducommun St, Los Angeles, Calif
(For officers see South Central listing)
CLAY SPUR PLANT, OSAGE & COLONY PLANT, Colony (P O: Belle Fourche, S D)
open pit, Bentonite
DRY GRINDING
B C Elsley, supt

BENTON CLAY CO
Casper
Pres: W P Clark
VP: Fred Carr
Secy-treas: Henry Burgess
Field mgr: I Kreiner
MINES near Casper & Kaycee, open pit, Bentonite
MILL at Casper

BLACK HILLS BENTONITE, INC
Moorcroft
Pres: Harry T Thorson
Gen mgr: A C Harding
MINE at Moorcroft & Upton, open-pit, Bentonite
TREATMENT PLANT at Moorcroft
Bill Ash, mill supt
Prod: 150 tons daily

COLORADO FUEL & IRON CORP
(For officers, see Colorado listing)
SUNRISE MINE, Sunrise, underground, Fe
W L Sisson, supt

COMSTOCK MINING CO
Meeteetse
(For officers, see Anaconda Lead & Silver Co, Colo)

EASTERN CLAY PRODUCTS, INC
Belle Fourche, S Dak
Pres: Vernon F Taylor
VP: W J Dunheck
MINE at Crook co, open pit, Bentonite
K L Arthur, mgr & purch agt
J A Brown, mine supt
MILL at Moorcroft
Prod: 15,000 tons per month

GALENA RIDGE MINES CO
Meeteetse
(For officers, see Anaconda Lead & Silver Co, Colo)

GREAT WESTERN SUGAR CO, THE
Box 5308, Terminal Annex, Denver 17, Colo
Pres: F A Kemp
MINE, Itorse Creek, underground, Fluxing Limestone, Ballast, Rip-Rap
Capacity: 125 tons per hour

INTERSTATE CHEMICAL CO
2303 Northern Life Tower, Seattle 1, Wash
MINE & MILL, Cody, gypsum

MONOLITH PORTLAND MIDWEST CO
(Oxide Division), Laramie
Pres: Coy Burnett
Supt: F J Anderson
Mgr: H D McBride
Res engr: W C Graham
Agents for DPC, lime-soda, sinter
60-TON PILOT PLANT for production of Alumina from Anorthosite
Standby condition

PHOSPHATE FERTILIZER, INC
Kemmer
Pres: Hayden Fox, Ogden, Utah
VP: Joe Profaizer, Ogden, Utah
Secy-treas: Gerald Hicken, Kemmer
Gen mgr: Matt Bertagnoli, Kemmer
MINE, 9 mi N of Susie, underground, Phosphate
Idle
Mill capacity: 200 tons daily

PIONEER CARISSA GOLD MINES, INC
617 Zions Savings Bank Bldg, Salt Lake City, Utah
Pres: Virdin R Johnson
Gen mgr: George B Colemore
Purch agt: E U Swallberg
CARISSA MINE, South Pass City, underground, Au
100-TON CYANIDE MILL
Idle

SAN FRANCISCO CHEMICAL CO
Box 788, Montpelier, Idaho
Pres & gen mgr: D L King
LEEFE MINE, Leefe, open pit, phosphate rock
S D Dodds, purch agt
Art Fredrickson, mine fore
Prod: 500 tons daily
OPEN PIT, PHOSPHATE ROCK & CRUSHING PLANT
Preston S Pugmire, mill fore
Charles S Stephens
Prod: 15,000 tons monthly

SHOSHONE MINING CO
Meeteetse
(For officers, see Anaconda Lead & Silver Co, Colo)

SOIL SULPHAID DIST CO
Box 606, Thermopolis
Pres: Geo Sinton
Gen sls mgr: Maynard Sinton
MINE in Thermopolis, open pit, 400-yd dragline, G, Gypsum

SMUGGLER MINING CO
Meeteetse
(For officers, see Anaconda Lead & Silver Co, Colo)
Under dev

THORSON, HARRY T
Osage
BENTONITE MINE
Prod: 100,000 tons yearly

UNITED PRODUCTS CO, INC
Rock River
MINE, W of Rock River, open pit, Bentonite
MILL at Rock River

VANDERWALKER, J E & CO
Victor, Colo
Owner: C P Brown, Victor Colo
MINE 4 mi NE of South Pass City, Au
Under dev

WESTVACO CHEMICAL DIVISION, FOOD MACHINERY & CHEMICAL CORP
Box 872, Green River
Pres: W B Thom
VP: H T Seaton
Dir: W N Williams
Gen mgr: C A Romano
WESTVACO MINE, 24 mi W of Green River, underground, Trona
G B Gaylord, mine supt
R F Love, asst mine supt
MILL
A P McCue, mill supt

EASTMAN CHEMICAL CO
4600 E 71st St, Cleveland, Ohio
Pres: Ralph Ditty
Gen mgr: Louis H Hepl
MINES at Upton & Colony
J E Hollmeyer, purch agt
F H Mendenhall, mine & mill supt
Otto K Ellerman, pl mgr, Upton
Carl Barrett, gen supt, Upton

NORTH CENTRAL

Iowa, Mich, Minn, Nebr, N Dak, S Dak, Wisc

AMERICAN COLLOID CO
Merchandise Mart Plaza, Chicago 54, Ill
BELLE MINE at Belle Fourche, S Dak, open-pit, Bentonite
Edwin Busfield, supt
MILL
Prod: 120,000 tons yearly

AMERICAN SMELTING & REFINING CO
(For officers, see Northeastern listing)
OMAHA PLANT, Omaha, Nebr, lead smelting & refining
Mgr: Carl Gall
Supt: J C Reinhardt

BAKER MINING CO
Operator: Geo Baker, Shullsburg, Wisc
Tailings piles on various mines, Pb, Zn

BALD MOUNTAIN MINING CO
Trojan, S Dak
Pres: O D Collis
Gen mgr: D E Moulds
MINE 6 mi W of Lead, So Dakota, open pit underground, Au, Ag
A J Stoehr, mine supt
R Coppo, mine fore
J Biachetto, mine fore
J Lauritsen, mine fore
W Hendrickson, elec engr
L Trucano, mech engr
C E Dawson & N P Goodrich, cons engrs
Paul Miller, geol
350-TON CYANIDE MILL
A D Gallo, mill supt
C Gifford, mill fore
Wilbur Harris, assy

BELLE ELDRIDGE GOLD MINES, INC
Box 437, Spruce Gulch, Deadwood, S Dak
Pres: Alfred Haug, Deadwood, S Dak
Gen mgr: K Bulow-Nielson, Deadwood
Secy-treas: Ove E Ellefson
Dir: C M Austin
Dir: Charles Iseman
Dir: William Bessler
Dir: Ernest Olson
BELLE ELDRIDGE GOLD MINES, INC, Au, Ag, Pb, Zn
100-TON FLOT MILL
Under dev (geophysical testing & core drilling)

BELLE FOURCHE BENTONITE PROD CO
Belle Fourche, S Dak
Pres: W I Smith
Secy-treas: George C Johnson
MINE near Belle Fourche, Bentonite
250-TON DRYING & PULVERIZING PLANT
Prod: 700,000 tons yearly

BENTON MILLING CO
(See Vail Engineering Co)

BLACK CHRYSTAL MINE
Keystone, S Dak
Owners: D H G & Bert A Hardesty
MINE 5 mi NE of Hill City, W
Under dev

BLACK HILLS KEYSTONE CORP
Keystone, S Dak
Pres: W K Wallace
INGERSOL MINE, Beryl, Lepidolite, Mica, Tantalite, Feldspar
50-TON FLOT MILL
A I Johnson, met & mining engr

BLACK HILLS TIN CO
332 S Michigan Ave, Chicago, Ill
Pres: Ross J Beatty
Secy: E A Brophy
Treas: John T Beatty
MINES at Tinton, S Dak, open pit, Li, Ta, Feldspar
Jay MacArthur, mine supt
A I Johnson, mgr & engr
300-TON GRAV FLOT MILL
FELDSPAR GRINDING PLANT
Idle

BOG IRON MINE
(See John Lessering & Associates)

BUTLER BROTHERS
1300 Leader Bldg, Cleveland, Ohio; Mine offices at Hibbing & Cooley, Minn
Pres: J H Thompson
VP: H L Pierce
Secy: G W Humphrey
Treas & asst secy: C W Gardner
Asst treas: S L Engel
Gen mgr: R C Fish, Duluth, Minn
Gen mgr of Minn mines: R W Whitney, Hibbing, Minn
Asst gen mgr of Minn mines: C E McManus, Hibbing
Asst gen mgr of Minn mines: E S Mollard, Cooley
Purch agt: G H Shields, Hibbing
WASHING & HIGH DENSITY PLANTS at Cooley & Nashwauk, Fe
HARRISON GROUP, Nashwauk
PATRICK KEVIN GROUP, Nashwauk
GALBRAITH CAROL GROUP, Nashwauk
MCGOUN (Philbin Mining Co) Hibbing
SOUTH AGNEW (South Agnew Mining Co) Hibbing

CALUMET & HECLA CONSOLIDATED COPPER CO
1 Calumet Avenue, Calumet, Mich
Pres: Endicott R Lovell
VP: A E Petermann
Gen mgr: O A Rockwell
Purch agt: L H Donald
AHMEEK, ALLOUEZ, CALUMET, CENTENNIAL, HECLA, IROQUOIS, KEWEENAW, PENINSULA, & SENECA MINES at Calumet, Mich, underground, Cu
C A Campbell, mine supt
H S Donald, ch engr
T M Broderick, ch geol
R R Spencer, mech engr
W L Hanson, elec engr
Geo Gedge, safety engr
FLOT-GRAV MILL
R K Poull, mill supt
Prod: 8,000 tons daily
CALUMET & HECLA SMELTER, Nuttbell, Mich
5 revert Cu furnaces with total capacity of 8,000,000 lbs refined Cu per month
Raymond Marcotte, met
R Gertz, assy
WISCONSIN BRANCH MINE, Shullsburg, Wisc, underground, Pb, Zn
John Laslo, branch mgr
R Kilebenstein, mine fore
MILL
George Sullivan, mill supt
Prod: 800 tons daily

CARTER & MELOY
Benton, Wisc
LEAD MINE, Zn
Small production

CERTAIN-TEED PRODUCTS CORP
120 E Lancaster Ave, Ardmore, Pa
(For officers see Northeastern listing)
Operations in Grand Rapids, Mich; underground, Gypsum
Operations in Fort Dodge, Iowa; open pit, gypsum

CHADWICK, VIRGIL
(Partnership)
Mgr: Virgil Chadwick
Hazel Green, Wisc
MINE near Hazel Green, Zn, Pb

CHARLESON IRON MINING CO
Power Bldg, Room 201-205, Box 335, Hibbing, Minn
Pres & gen mgr: E F Kemer
VP & gen supt: Charles H Kemer
Purch agt: A T Steele
Iron-ore operations from stockpile to 1,000-ton grav mill, Charleson Concentrator
J C Henry, mill supt

CHERRY MINING CO
Operator: John Cherry, Benton, Wisc
Pb, Zn
CHAMPION MILL

CHESTNUT HILL ZINC CO
Box 1028, Galena, Ill
Pres & gen mgr: Hugh P Nicholson
HOSKINS MILL, Shullsburg, Wisc
Pb, Zn
300-TON GRAV FLOT MILL
Idle

CLEVELAND-CLIFFS IRON CO
2031 2nd Ave E, Hibbing, Minn; Ishpeming, Michigan; 1460 Union Commerce Bldg, Cleveland, Ohio
Pres: A C Brown, Cleveland, Ohio
Gen mgr: C W Allen
MINES on Minnesota Range, Fe
G J Holt, mgr at Hibbing, Minn
R M Belliveau, dist supt, Hibbing
H C Bolthouse, supt
AGNEW MINE, Hibbing, underground
SARGENT MINE, Keewatin, underground
J J Foucault, supt
HAWKINS MINE, Nashwauk, open pit
WASHING PLANT
P P Swanson, supt
HILL-TRUMBILL MINE, Minn marble, open-pit
WASHING & HI-DENSITY PLANT, Calumet
Hugh J Leach, supt
HOLMAN-CLIFFS MINE, Taconite, open pit
WASHING & HI-DENSITY PLANT, Taconite
W A Pakkala, supt
CANISTEO MINE, Coleraine, Minn, open-pit
WASHING & HI-DENSITY PLANT, Coleraine
E L Bemis, supt
ATKINS MINE, Kinney, open pit
WANLESS MINE, Buhl, open pit
R Erickson, supt

CONSOLIDATED FELDSPAR CORP
Keystone, S Dak
MINE & MILL, Feldspar
J W Mitchell, supt
Harry W Wasson, asst supt
MINE at Custer, S Dak, Feldspar
80-TON GRINDING MILL
R H Brigham, supt

COOMS, E W, CO, INC
Grant St & 1st Ave, Hibbing, Minn
Pres: W C Cohoe
Gen supt: R A MacDonell
JULIA & COMMODORE MINES, Virginia, Minn, Fe

COPPER RANGE CO
Houghton, Michigan; 24 Federal St, Boston 10, Mass
(For officers, see Northeastern listing)
MINING DIVISION
Offices at Painesdale, Mich
W E Romig, gen mgr
MINES in Upper Peninsula of M Mich, underground, Cu
B D Noetzel, purch agt
Ernest Hitchens, mine fore
William J Andrews, mech engr
Martin Meyers, elec engr
Philip Vertner, safety engr
FLOT MILL
Ivan T Bowman, mill supt
Matt Salminen, mill fore
SMELTER at Houghton, 50,000,000# Cu
R J B LaBelle, met
Ross Gamble, assy

CUBA MINING CO
Platteville, Wisc
Treas: A W Heins
Business mgr: E G Deutman
ANDREWS MINE & LYNE MILL in Shullsburg dist, Zn, Pb
GRAV MILL
Prod: 26,000 tons concentrates annually

DATES MINING CO
219 W Kent Road, Duluth 5, Minn
Pres: J O Rhude
Purch agt: L A Ruud
PENNINGTON MINE on Cuyuna Range, 2 mi NW of Ironton, Minn, open pit, Fe
HMS MILL
P H Ramsden, mill supt

DODGEVILLE MINING CO
924 Gay Bldg, Madison, Wisc
Partner: James J MacDonald
Gen mgr & partner: C W Singer
DODGEVILLE #3 MINE, Dodgeville, Wisc, Pb, Zn
E J Fredrichs, gen supt
J W Wagner, mine fore
50-TON GRAV FLOT MILL
John Becksircher, mill supt
Walter Cook, mill fore
Alvin Johnson, flot mill fore
225 ton mine run

DOUGLAS MINING CO
(M A Hanna Co, operating subsidiary), 1300 Leader Bldg, Cleveland 14, Ohio
Ch of bd & dir: G M Humphrey
Pres & dir: J H Thompson
VP & dir: Perry G Harrison
VP & dir: H L Pierce
Secy: G W Humphrey
Treas & asst secy: C W Gardner
Asst treas: S L Engel
Dir: G W Hewitt
Dir: W W Holloway
Dir: A J McFarland
Gen mgr: R C Fish, Duluth, Minn
MINES on Mesabi Range, Minn, Fe
R W Whitney, gen mgr Minn mines, Hibbing
DOUGLAS MINE, Balkan, open pit
WASHING PLANT, Chisholm
R M Gross, supt
NEVILLE RESERVE, Stuntz

EAGLE-PICHER MINING & SMELTING CO
1st Nat'l Bank Bldg, Miami, Okla
(For officers, see South Central listing)
GRAHAM CENTRAL MINE & MILL, in Wisc, Address: Galena, Ill, Zn, Pb
A S Molocsay, mgr

EMPIRE GOLD MINES, INC
Rapid City National Bank Bldg, Rapid City
Pres & gen mgr: I M Uppercu
Secy: George E Flavin
LODE & PLACER MINES & MILL, NE of Hill City, Au
125-TON MILL

FRERICHS MINING CO
Deadwood, S Dak
Pres: A Fredrichs
Secy-treas: E H Hall
Au, Ag
Under dev

GIRMAN MINING CO
Operator: John Girman, Mineral Pt, Wisc
Pb, Zn

GLOBE IRON CO
Jackson, Ohio
MINE, Dickinson co, Mich, Fe

GOLD MOUNTAIN MINING CO
Hill City
Pres, treas & mgr: A Jackson Birdsell
Secy: Marion E Birdsell
75-TON FLOT MILL
Under dev

GRAND RAPIDS PLASTER CO
1204 Peoples National Bank Bldg, Grand Rapids 2, Mich
MINE & MILL in Grand Rapids, Kent co, Mich, gypsum

H B & H MINING CO
(Hollander, Baker & Hofer)
Shullsburg, Wisc
Owner: George H Baker
Rock Tailing Piles
DEROCHER MINE

HALEY-YOUNG MINING CO
2117 First Ave, Hibbing, Minn
Pres: E A Young
Secy: David D Haley
ELBERN MINE, 2 mi SE of Fraser, Minn; open pit, Fe
Leo Cashen, mine supt
Phillip Solmonson, mine fore
Lerch Brothers, Inc, assy

HANNA, M A, CO
1300 Leader Bldg, Cleveland 14, Ohio
See Butler Brothers (North Central)
See Douglas Mining Co (North Central)
See Hanna Coal & Ore Corp (below)
See Hanna Iron Ore Co (below)
See Hanna Ore Mining Co (below)
See Mahland Ore Co (North Central)
See Ozark Ore Co (South Central)
See Philbin Mining Co (North Central)
See Richmond Iron Co (North Central)
See South Agnew Mining Co (North Central)

HANNA COAL & IRON CORP (M A Hanna Co, operating subsidiary), 1300 Leader Bldg, Cleveland 14, Ohio
Ch of bd & dir: William Collins

Pres & dir: J H Thompson
Exec VP: J W Sherwin
VP: P E Francis
VP: P G Harrison
VP: A B Kern
VP: E J Myers
VP: H L Pierce
VP: W B Poindexter
Secy: G W Humphrey
Treas & asst secy: W C Pieper
Asst treas: S L Engel
Asst secy: C W Gardner
Asst treas: C C Lindeman
Dir: R L Ireland
Dir: C W Osborne
Dir: G M Humphrey
Mines in Bloomfield Township, Fillmore co, Minn, open pit, Fe
Gen mgr Minn mines: R W Whitney, Hibbing, Minn
BLY MINE
HAILAND MINE
WASH PL, Ostrander
L T Kreue, supt
SIMON-BLY MINE
Mines at Iron River, Mich, Fe
Mgr Mich mines: S E Quayle, Iron River, Mich

HANNA IRON ORE CO (M A Hanna Co, operating subsidiary), 1300 Leader Bldg, Cleveland 14, Ohio
Ch of bd & dir: G M Humphrey
Pres & dir: J H Thompson
VP: P G Harrison
VP & Dir: F M Hesse
VP: H L Pierce
Secy: F M Hesse
Treas & asst secy: C W Gardner
Asst secy: M E Arden
Asst secy: G W Humphrey
Asst treas: S L Engel
Asst treas: Paul E Shroads
Dir: G R Fink
Dir: T E Millsop
Dir: E T Weir
Gen mgr: R C Fish, Duluth, Minn
Mgr Mich mines: S E Quayle, Iron River, Mich
Gen mgr Minn mines: R W Whitney, Hibbing, Minn
Mines on Mesabi Range, Minn, Fe
BECKFELT RESERVE, Bass Brook Township Idle
DRAPER ANNEX RESERVE, Greenway Township, open pit
WASH PL, Calumet
John Kielmola, supt
Idle
FINNEGAN RESERVE, Bass Brook Township Idle
LUNDRIGAN RESERVE, Bass Brook Township Idle
NATCHEZ RESERVE, Bass Brook Township Idle
PARCEL NUMBER 3 RESERVE, Coleraine, Idle
POKEGAMA RESERVE, Bass Brook Township Idle
SECTION 18 RESERVE, Stuntz Township, open-pit
Mines on Cuyuna Range, Minn, Fe
HARROWS RESERVE, Crow Wing Township Idle
CHISHOLM-WILLIAMS RESERVE, Chisholm, underground, Idle
CUYUNA RESERVE, Oak Lawn Township, Idle
DUNN RESERVE, Oak Lawn Township, Idle
N W I RESERVES, Nokay Lake & Oak Lawn Townships, Idle
PORTSMOUTH MINE, Crosby, open pit
WASH, SCREEN & SINTER PL, Crosby
Guy B Hunner, supt
TABERT RESERVE, Oak Lawn Township, Idle
WALKER RESERVE, Nokay Lake Township, Idle
ZINO RESERVE, Manganese, Idle

HANNA ORE MINING CO (M A Hanna Co, operating subsidiary), 1300 Leader Bldg, Cleveland 14, Ohio
Ch of Bd & dir: G M Humphrey
Pres & dir: J H Thompson
VP & dir: P G Harrison
VP & dir: H L Pierce
Treas & asst secy: C W Gardner
Asst treas: S L Engel
Secy: G W Humphrey
Dir: C W Beck
Dir: J L Neudoerfer
Gen mgr: R C Fish
Mines on Mesabi Range, Minn, Fe
Gen mgr Minn mines: R W Whitney
BOVEY-DE LAITTRE RESERVE, Grand Rapids Township, Idle
ENTERPRISE RESERVE, Virginia, Idle
FARGO RESERVE, Grand Rapids Township, Idle
GORDON ANNEX RESERVE, Nashwauk Township, Idle
GORDON RESERVE, Nashwauk Township, Idle
IMPRO RESERVE B, Hibbing
MESABI CHIEF MINE, Nashwauk Township, open-pit
MISSISSIPPI NUMBER 1 MINE, Keewatin, open pit, Idle
MISSISSIPPI NUMBER 3 MINE, Keewatin, open pit
NORPAC RESERVE B, Hibbing
SARGENT RESERVE, Hibbing, Idle
STEIN MINE, Nashwauk Township, open pit
WASH PL, Buhl

HEDMAN MINING CO
Hibbing, Mich
Pres & gen mgr: Carl Hedman
VP: Hugh H Harrison
Secy-treas: D J Keeler
CROXTON & DREW-STME MINES, Balkan Township Mesabi Range, Minn; open pit, Fe

HOFER, FRED & SONS
Shullsburg, Wisc
DEROUCHER MINE, Zn, Pb
Prod: 850 tons ore monthly

HOLY TERROR MINING CO
Keystone, S Dak
Secy: George Flavin
Supt: A I Johnson
Au
100-TON CYANIDE PLANT

HOMESTAKE MINING CO
Main office, 100 Bush St, San Francisco 4, Calif
Pres: Donald H McLaughlin, San Francisco, Calif
VP & gen mgr: Guy N Bjorge, Lead, S Dak
VP & treas: Archibald A Gulick, New York, New York
VP: James W Swent, San Francisco, Calif
Secy: John W Hamilton, San Francisco, Calif
Asst secy: William Murray, San Francisco, Calif
Dirs: Donald H McLaughlin, Guy N Bjorge, Archibald A Gulick, James W Swent, Henry C Brunie, Ira B Joralemon, William W Murray, Lewis W Douglas, C J Salisbury
Transfer agt: Irving Trust Co, 1 Wall St,
HOMESTAKE MINE, Lead, S Dak, Au
Guy N Bjorge, VP & gen mgr
H A Walker, asst gen mgr
E G Ross, mine supt
Chambers Kellar, ch counsel
Kenneth C Kellar, asst counsel
James O Harder, ch geol
J D Johnson, ch engr
R B Fleeger, ch surgeon
Josiah Gerrans, ch mech engr
C L Gust, ch elec engr
James A Noble, cons geol
J W Estes, mgr, lumber & timber dept
Harold E Ross, mgr, Wyodak Coal Co
4,000-TON CYANIDE MILL
Nathaniel Herz, ch met

INLAND STEEL CO
38 South Dearborn St, Chicago 3, Ill
Pres: Clarence B Randall
Purch Agt: W H Stapleton
IRON ORE OPERATIONS
A J Cayia, mgr ore mines & quarries, Manistique, Mich
R D Satterley, gen supt, Ishpeming, Mich
BRISTOL MINE, Crystal Falls, Mich, underground
W P Reed, mine supt

GREENWOOD MINE, Ishpeming, Mich
E W Whitman, supt
MORRIS MINE, Ishpeming,
R W Edwards, supt
SHERWOOD MINE, Iron River, Mich
P D Pearson, supt Menominee Range mines
ARMOUR #1 & #2 MINES, Ironton, Minn, open pit
A T Anderson, supt
FLUORSPAR OPERATIONS
A J Cayia, mgr, Manistique, Mich
INTER-RANGE MINING CO, 323 W Superior St, Duluth 2, Minn
Pres: C H Taylor
Secy: David D Haley
VP & supt: E A Young
MINNEWAS MINE on Mesabi Range, underground & open pit, Fe

INTER-STATE IRON CO
First Nat'l Bank Bldg, Virginia, Minn (subsidiary of Jones & Laughlin Steel Corp, Pittsburgh, Penn)
VP: Grover E LeVeque
Gen supt: H F Kullberg
Res engr: Howard T Caddy

MINES on Mesabi Range, Minn; Fe
HILL ANNEX MINE, Calumet
Screening, crushing & concentrating plants
R O Brandon, supt
Prod: 751,092 tons shipped in 1950
SULLIVAN #2 MINE, Calumet
Ore treated at Hill Annex Plant
R O Brandon, supt
Prod: 20,436 tons shipped in 1950
LONGYEAR MINE, Hibbing
Screening, crushing & concentrating plants
John F Linden, supt
Prod: 984,586 tons shipped in 1950
COLUMBIA-MISSABE MOUNTAIN MINES, Virginia
Screening, crushing & concentrating
P W Kruse, supt
Prod: 790,367 tons shipped in 1950
GRANT MINE, Buhl
Screening, crushing & concentrating plants
John F Linden, supt
Prod: 363,183 tons shipped in 1950
SCHLEY MINE, Gilbert
Paul W Kruse, supt
Under dev

IRON LODE MINE
(See John Lessering & Associates)

JACKSON IRON & STEEL CO
Jackson, Ohio
Operator: Edward C Bradley & Sons
Iron Mountain
BRADLEY MINE, Iron Mt, Minn, Fe
Prod: 32,618 tons ore in 1950

JOHN ROSS MINE
Custer, S Dak
Owner & mgr: John Ross
MINE 6 mi NW of Custer; Feldspar, Mica, Beryl, Columbite

JONES & LAUGHLIN
Ishpeming, Mich
(See Inter-State Iron Co)

LESSERING, JOHN, & ASSOCIATES
Rochford, S Dak
BOG IRON MINE & IRON LODE MINES, Lisbon
John Lessering, mgr

LITTLE BENNY MINING CO
Shullsburg, Wisc
Partners: Edward Siegel, Frank Moore, Alvin Moore & LeRoy Moore
ANNIE WALTON MINE, Zn, Pb
MONROE MINE
Under dev

LITTLE GRANT MINING CO
Benton, Wisc
Mgr: A L Murray
LITTLE GRANT MINE, Benton, Wisc, in Platteville dist, underground, Pb, Zn
450-TON MILL

LOR MINING CO
225 North 26th Ave East, Duluth, Minn
Gen mgr: James W Savage
MINE in Black Hills dist near Keystone, S Dak
Exploration work done by U S Bureau of Mines

MAHLAND ORE CO
(M A Hanna Co, operating subsidiary), 1300 Leader Bldg, Cleveland 14, Ohio
Pres & dir: J H Thompson
VP & dir: H L Pierce
VP & dir: J D Block, Jr
Secy: G W Humphrey
Treas & asst secy: C W Gardner
Asst treas: S L Engel
Dir: L B Hunter
Gen mgr: R C Fish, Duluth, Minn
Mgr Mich Mines: S E Quayle, Iron River, Mich
PROPERTY at Wakefield, Mich, Fe

MAYWOOD CHEMICAL WORKS
Maywood, New Jersey
Mgr: Dewey Peterson
THE ETTA MINE, Keystone, S Dak; Spodumene

MEEKER'S GROVE MINING CO
(Partnership)
305 Broadway St, Platteville, Wisc
LIBERTY & LEO V MINES, 5 mi NE of Cuba City, Wisc, underground, Zn
50-TON GRAV FLOT MILL, at Old Dall Mill 1/2 mi from Liberty mine
Idle, under construction

MELOY-BAKER MINING CO
Benton, Wisc
Co-partner: J F Meloy
CRAHALL MINE

MIFFLIN MINING CO
c/o Jack Tracy, Platteville, Wisc
Mgr: Jake Howland
DEFENSE & COKER MINES in Wisc
200-TON MILL
Under dev

MINERAL MINING CO
Box 391, Iron River, Mich
Pres: W D Van Dyke, Jr
Gen mgr: Fayette E Brown
Asst mgr: William F Brown
BETA-NANAIMO & BUCKHOLTZ MINES, Fe
Leona Glemboski, purch agt
Under dev

MOORE, W S CO
Brooklyn Road, Hibbing, Minn
Pres: Warren S Moore
Secy: Hubert A Nelson
Gen mgr: Hiram E Reese
Purch agt: J R Steele
Gen supt: John Johnson
HUDSON MINE, 1½ mi S of Buhl, Minn, open pit, Fe
Under dev
PRINDLE MINE, 1 mi W of Virginia, Minn, open pit, Fe
HMS MILL

MURRAY & RICHARDS
500 Minerva St, Darlington, Wisc
Mgr: J H Richards, 500 Minerva St, Darlington, Wisc
DOYLE MINE, Zn, Pb
Prod: 700 tons ore monthly

NATIONAL GYPSUM CO
325 Delaware Ave, Buffalo, New York
(See Northeastern listing for officers)
QUARRY & PLANT, Port Dodge, Iowa; Gypsum
H J Marsham, plant mgr
J C Pitts, quarry supt
QUARRY & PLANT, National City, Mich; Gypsum
R E Scifres, plant mgr
R H Allen, quarry supt

NEW ADVENTURE MINING CO
Cuba City, Wisc
Fe

NORTH RANGE MINING CO
Negaunee, Mich
Pres & gen mgr: R S Archibald
VP: Frank P Book
Secy: Elmer S Holmgren
Asst mgr: C W Nicolson
Geol: L E Smith
Ch elect: Gust H Peterson
BLUEBERRY MINE, Ishpeming, Mich
Alvin J Guscatt, supt
Ray L Prideaux, mng cap
P A Alexancer, purch agt
John A Nicolson, ch engr
BOOK MINE, Alpha, Mich
J C Kirkpatrick, supt
Charles Coole, mng cap
CHAMPION MINE, Champion, Mich
F R Werther, supt
Bryan Farragh, mng cap

OGLEBAY NORTON & CO
Hanna Bldg, Cleveland 15, Ohio
NORTHERN OFFICE, Montreal, Wisc
Range mgr: Frank J Smith
Ch mng engr: D S Young
Conc engr: H K Martin
MONTREAL MINING CO, (Subsidiary)
1208 Hanna Bldg, Cleveland 15, Ohio
Pres: G G Wade
VP: Courtney Burton
Secy: A C Bishop
Treas: R C Norton
Asst secy: R H Weir
MONTREAL MINE, Montreal, Wisc, Fe
Roy A Bowen, supt
C A Bjork, asst supt

OLIVER IRON MINING CO
Wolvin Bldg, Duluth 2, Minn
(Subsidiary of United States Steel Corp)
Pres: R T Elstad
VP of operations: J E Machamer
VP of research: W L Maxson
Secy: A R Morton
Treas: R L Larson
Compt: R B Henley
Asst to VP: W N Matheson, Jr
Gen mng engr: L J Severson
Geol: R H B Jones
Asst supr of ore movement: S Naismith
Mgr, spec inves & expl: P W Chase
Ch engr: C N Bailey
Dir of Ind rel: R O Hawkanson
Purch agt: O W Cole
Supt, timber lands: J Steinke
EASTERN DIST
W J Kaiser, gen supt
A R McLeod, supt of maint
A C Prisk, asst supt of maint
P V Burgett, ch mng engr
J T Nolan, asst ch mng engr
I L Reid, asst ch mng engr
A W Bibbins, ch chem
I R Lerohl, asst ch chem
W J Trudgeon, asst ch chem
S F Willey, gen pit fore
CANTON MINE, Biwabik, Mesabi Range, Minn; open pit
K H McInnes, asst supt
EVELETH MINES
J M Johnson, supt
E J E Olson, asst supt
F D Hoover, Jr, gen mng cap
MOUNTAIN IRON MINE, Mountain Iron, Mesabi Range, open pit
J H Rubow, supt
L E McKenzie, asst supt
PIONEER MINE, Ely, Vermilion Range, underground
L E Dick, supt
J R Aho, mng cap
ROUCHLEAU MINE, Virginia, Mesabi Range, open pit
W H Wright, gen pit fore
ROUCHLEAU C & S PLANT
L S Campbell, supt
SIBLEY MINE, Ely, Vermilion Range, underground
L E Dick, supt
J D Warner, mng cap
SOUDAN MINE, Breitung Township, Vermilion Range, underground
E M Holmes, asst supt
G J Nemanich, Jr, asst mng cap
SPRUCE MINE, Eveleth, Mesabi Range, open-pit & underground
C V Wargstrom, gen pit fore
V E MINES
I O N Swanson, asst gen supt
HIBBING-CHISHOLM DIST
J H Hearding, Jr, gen supt
J Chisholm, asst gen supt
C R Burton, supt of maint
J R Schoenig, Jr, asst supt of maint
W P Wolff, ch mng engr
R M Moyle, asst ch mng engr
O L Forsberg, ch chem
W E Holliday, asst ch chem
A J Hermann, elec supt, Minn dists
GODFREY MINE, Chisholm, Mesabi Range, underground
W Been, supt
T H Cain, asst supt
A F Hulme, mng cap
HULL-RUST MINES, Hibbing, Mesabi Range, open pit
M J Forsmark, supt
N G Helland, asst supt
HULL C & S PLANT
P A Cheever, gen plant fore
MONROE MINE, Chisholm, Mesabi Range, open pit
R W Segar, supt
J C Cullis, gen pit fore
PILLSBURY MINES, Balkan Township, Mesabi Range, open pit & underground
H M Pickering, supt
E V Nelson, asst supt
SHERMAN MINE, Balkan Township, Mesabi Range, open pit
S R Micka, supt
E C Silver, asst supt
W K Reichel, gen pit fore
CANISTEO DIST
E A Friedman, gen supt
E R Bechtel, ch chem
L E Battles, ch mng engr
R F Knight, mast mech
ARCTURUS-GROSS MARBLE, Taconite, Mesabi Range, open pit
M E Johnson, supt
TROUTE LAKE CONCENTRATOR
K F MacAlpine, supt
WALKER MINE, Bovey & Coleraine, Mesabi Range, open pit
J H Harrison, supt
H C Ernst, gen pit fore
GOGEBIC DIST
I G Roy, ch engr
E W May, ch grader
GENEVA MINE
H W Byrne, supt
F W Denton, Jr, asst supt
C B Russell, head mng cap

PACIFIC ISLE MINING CO
2521 First Ave, Hibbing, Minn
Pres & gen mgr: Hugh H Harrison
Ch engr & supt: John D Boentje, Jr
Supt: Robert H Chisholm
Pl fore: Emil T Leppanen
Office mgr: D J Keeler
Supt: Arne O Tuomala
Open-pit mines on Mesabi Range, Minn, Fe
CHATACO MINE, Chicholm
KERR MINE, Stuntz Township
LAMBERTON MINE, Stuntz Township
YORK MINE, Nashwauk
HMS PL
Capacity: 125 tons per hour

PENNSYLVANIA SALT MFG CO
1000 Widener Bldg, Philadelphia 7, Pa
SALT PLANT at Wyandotte, Wayne co, Mich

PHILBIN MINING CO
(M A Hanna Co, operating subsidiary), 1300 Leader Bldg, Cleveland 14, Ohio
Pres: J H Thompson
VP & dir: P D Block, Jr
VP & dir: H L Pierce
Secy: G W Humphrey
Treas & asst secy: C W Gardner
Asst secy: Graydon Megan
Asst treas: S L Engel
Asst treas: R L Peters
Dir: L B Hunter
WEGGUM MINE on Mesabi Range, Minn; Fe

PICKANDS, MATHER & CO
700 Sellwood Bldg, Duluth 2, Minn
Gen mgr: A D Chisholm
Asst mgr: John C Metcalf
Asst mgr: Kenneth Duncan
Asst to mgmt: E L Joppa
Purch agt: D A Bruneau
Ch mech engr: O L Yauch
Ch mech engr: A C Butterworth
HIBBING DIST, Mesabi Range, Fe
E J Fearing, gen supt
R W Sullivan, dist mng engr
Lee McNulty, ch clk
C E Hager, dist safety supr
M L Bradt, asst supt
CRETE MINING CO
ALBANY MINE
T R Tregembo, asst supt
ST ANTHONY NO 2 RESERVE
BENNETT MINING CO
BENNETT MINE
WASH PL at Keewatin
A E Schneider, supt
UTICA MINING CO
CARSON LAKE MINE, Carmi
E T Lang, asst supt
BALKAN MINING CO
DANUBE MINE
WASH PL at Bovey
D E Coughlin, supt
ERIE MINING CO
ERIE RESERVES
HURON LAND CO
HURON RESERVES
MAHONING ORE & STEEL CO
MAHONING MINE
W G Brown, supt
MAHONING RESERVES
ONTARIO IRON CO
ONTARIO RESERVES
HOYT MINING CO
SCRANTON MINE
CRUSHING PL at Hibbing
W D Webb, supt
SYRACUSE MINING CO
SYRACUSE RESERVES
EAST MESABI DIST
T J Thielman, gen supt
CORSICA IRON CO
CORSICA MINE
CRUSHING & WASH PL at Gilbert
H F Sears, supt
BIWABIK MINING CO
BIWABIK MINE
CRUSHING & BENEFICIATING PL at Biwabik
J M Shields, supt
LAKE MINING CO
EMBARRASS MINE
CRUSHING PL at Biwabik
R F Kohn, supt
ERIE MINING CO
CONCENTRATING PL at Biwabik
G C Watts, supt
ELY DIST, VERMILLION RANGE
VERMILLION MINING CO
ZENITH MINE
B S Richards, supt
CUYUNA DIST, CUYUNA RANGE
J P Schemmel, supt
G C Chamberlain, dist mng engr
O W Peterson, ch clk
CUYUNA ORE CO
MAHNOMEN MINE
CRUSHING PL at Ironton
YOUNGSTOWN MINES CORP
RABBIT LAKE MINE
SAGAMORE ORE MINING CO
SAGAMORE MINE
CRUSHING & DRYING PL at Riverton
GOGEBIC DIST, Ironwood, Mich
W A Knoll, gen supt
C D Bailey, asst gen supt
H W Johnson, dist mng engr
B D Kennedy, ch clk
Geo Gerry, dist safety supr
ODANAH IRON CO
CARY MINE, Hurley, Wisc, underground
A L Johnson, supt
YOUNGSTOWN MINES CORP
NEWPORT MINE, Ironwood, Mich, underground
H L Schieber, supt
ANVIL PALMS, KEEWENAW MINES, Bessemer, Mich, underground
R L Jose, supt
PURITAN MINING CO
PURITAN IRONTON MINES, Bessemer, Mich, underground
Under dev
H L Schieber, supt
PLYMOUTH MINING CO
PLYMOUTH MINE, Wakefield, Mich, open-pit
E C Sponberg, supt
SUNDAY LAKE IRON CO
SUNDAY LAKE MINE, Wakefield, Mich, underground
D B Cavan, supt
PALMER MINING CO
VOLUNTEER MINE, Palmer, Mich, open-pit
E C Sponberg, supt
MENOMINEE DIST
H J Richards, gen supt
W E Seppanen, dist mng engr
S K Brew, ch clk
L A Schutz, dist safety supr
PICKANDS MINING CO
DAVIDSON MINE, Iron River, Mich, underground
JAMES MINING CO
JAMES MINE, Iron River, Mich, underground
VERONA MINING CO
BUCK UNIT MINE, Caspian, Mich, underground

PITTSBURG MINING CO
Benton, Wisc
Secy-treas: Dale Gehrke
Zn, Pb

QUINCY MINING CO
63 Wall St, New York, New York
Secy-treas: A M Mansfield
QUINCY RECLAMATION PLANT, Mason, Mich

REDFEARN, ORTHEL
Leadmine, Wisc
JUG HANDLE MINE, Zn
Prod: 350 tons ore monthly

REFINITE CORP, THE
Box 1312, Omaha, Nebr
Pres: W H Ostenberg, Jr
VP: G F Lindig
VP, treas, & gen mgr: C A Spaulding, Jr
Purch agt: R C Alexander
MINE at Ardmore, S Dak; open pit, Bentonite
William F Rainey, mine supt
Prod: 20 tons daily

REPUBLIC STEEL CORP
Republic Bldg, Cleveland 1, Ohio
Pres: C M White
VP: E M Richards
Asst VP: E B Winning
Purch agt: F J Laskey, Cleveland
SUSQUEHANNA MINE at Hibbing, Minn; openpit
GRAV CUSTOM WASHER at Hibbing
J H Hocking, mine supt
M G Woodle, asst mine supt
B K Dutton, engr
John O Pearson, day pit fore
Elwood Ferris, night pit fore
Victor Crego, mech engr & elec engr
A J Mayheu, assy
Prod: 1,100,000 tons yearly
PENOKEE MINE at Ironwood, Mich; underground, Fe
A J Christenson, mine supt
Joseph Curaw, Asst mine supt
E W R Butcher, Duluth, ch engr
Oscar Holst, mine fore
Victor Crego, Duluth, mech & elec engr
John Trevarthen, assy
Prod: 600,000 tons yearly
ST PAUL MINE at Keewatin, Minn; open pit,
GRAV MILL
J H Hocking, mine supt
M G Woodle, Hibbing, asst mine supt
B K Dutton, Hibbing, mng engr
E H Murphy, Hibbing, mng fore
Victor Crego, mech & elec engr
A J Mayheu, assy
Prod: 350,000 tons yearly
STEVENSON MINE at Stevenson, Minn, open-pit, Fe
GRAV MILL
J H Hocking, mine supt
M G Woodle, asst mine supt
B K Dutton, mng engr
L J Marinello, pit fore
Victor Crego, mech & elec engr
A J Mayheu, assy

Prod: 215,000 tons yearly
TOBIN MINE at Crystal Falls, Mich; underground, Fe
E H Anderson, mine supt
Emil Johnson, mine fore
E W R Butcher, ch engr
Victor Crego, mech & elec engr
J H Meyer, assy
Prod: 432,000 tons yearly

RICHMOND IRON CO
(M A Hanna Co, operating subsidiary) 1300 Leader Bldg, Cleveland 14, Ohio
Pres & dir: J H Thompson
VP: P G Harrison
VP & dir: H L Pierce
VP & dir: C W Beck
Secy: G W Humphrey
Treas & asst secy: C W Gardner
Asst treas: S L Engel
Gen mgr: R C Fish, Duluth, Minn
Mgr Mich Mines: S E Quayle, Iron River, Mich
MINE at Palmer, Mich, Fe

SKUBIC BROTHERS CO
705 6th Ave N, Virginia, Minn
Supt: Frank Skubic
AJAX MINE, Biwabik, Mesabi Range, open-pit, Fe
AUBURN MINE, Virginia, Minn; stripping operations

SNYDER MINING CO
Executive offices: 812 Oliver Bldg, Pittsburgh, Penn
Duluth, Minn office: Alworth Bldg
Pres: W P Snyder, Jr
Asst to pres: Albert L Fairley, Jr
VP: H M Wilson
VP: W H Colvin, Jr
Secy: L B Perrin
Treas: J K Foster
Gen mgr: O A Sundness
Gen mech supt: A Tancig
Ch engr: A C Borgeson
MINES on Mesabi Range, Fe
Range office: Chisholm, Minn
WEBB MINE at Hibbing, Minn, underground & open pit
CRUSHING & SCREENING PL at Hibbing
4,100-ton per day WASH PL at Hibbing
J J Maney, supt
SHENANGO MINE, Chisholm, Minn, underground & open pit
C O Rudstrom supt
VIRGINIA MINE, Virginia, Minn, open pit
CRUSHING & SCREENING PL at Eveleth, Minn
R M Baker, supt

SOUTH AGNEW MINING CO
(M A Hanna Co, operating subsidiary), 1300 Leader Bldg, Cleveland 14, Ohio
Pres & dir: A F Peterson
VP & dir: Jos H Thompson
VP & dir: H L Pierce
Secy: G W Humphrey
Asst secy & treas: C W Gardner
Asst secy: W M Driver
Asst treas: S L Engel
Dir: P B Entrekin
Dir: John Nichols
MINES on Mesabi Range, Fe

STANLEY MINING CO
St Paul & Biwabik, Minn
Pres: Patrick Butler, 137 E 8th St, St Paul, Minn
VP: Frank S Bergstrom, Biwabik, Minn
Ch of bd: Emmett Butler
Supt: H F Manseau, Biwabik, Minn
MARY ELLEN MINE, Biwabik, Mesabi Range, Minn, open pit, Fe

UNITED STATES GYPSUM CO
300 W Adams St, Chicago 6, Ill
(For officers, see Calif listing)
FORT DODGE, IOWA, open pit, gypsum
ALABASTER, MICH, open pit, gypsum

VAIL ENGINEERING CO
Box 50, Platteville, Wisc
Operating under lease to Benton Milling Co, Benton, Wisc, Frances Cherry, secy-treas
Pres: A V Austerman
Secy-treas: Marjorie Webb
CHAMPION MINE, underground, Zn, Pb
GRAV-FLOT MILL

VINGAR HILL ZINC CO
Platteville, Wisc
Gen mgr: W W Smith
Works acct: Amos W Heins
EAST BLACKSTONE MINE, near Shullsburg, Wisc
Prod: 500 tons ore daily
HANCOCK MILL, near Shullsberg, Wisc, flot
Prod: 800 tons concentrate monthly

WESTERN BELL LODE
Route 2, Box 86, Custer, S Dak
Owners: Murphy & Nelson
Au

WHEELING STEEL CORP
Wheeling, West Virginia
Ch: W W Halloway
Pres: J L Neudoerfer
VP: J H McElhinney
VP: F C Reed
VP & treas: L W Franzheim
Compt: R D Swinburne
Secy: J E Bruce
IRON ORE MINE DIVISION, Virginia, Minn
WACOOTAH MINE
C R Emerson, mgr

WHITECHURCH & FARR
Shullsburg, Wisc
Mgr: G M Whitechurch
LITTLE MULLEN MINE in Shullsburg dist, Zn, Pb
Prod: 500 tons ore monthly

WYANDOTTE CHEMICAL CORP
Wyandotte, Mich
SALT PLANT, Wyandotte

YOUNG, E A, INC
2117 First Ave, Hibbing, Minn
Pres: E A Young
VP & mine supt: Nels Kemppainen
Secy: David D Haley
MINNEWAS MINE, 2 mi E of Virginia, Mesabi Range, Minn; open pit & underground, Fe
Aaro W Heikkila, mine fore
Lerch Brothers, Inc, assy

ZONTELLI BROS & LEACH
(Partnership)
VIRGINIA MINE, N of Ironton, Minn, Cuyuna Range, open pit, Fe

SOUTH CENTRAL

Ark, Kans, La, Okla, Mo & Tex

ALEXANDER MINING CO
Galena, Kans
Supt: Carl Alexander

ALLEN, C W & CO
Ponca, Ark
MINE in Newton co, Zn

ALLIED CHEMICAL & DYE CORP, GENERAL CHEMICAL DIVISION
40 Rector St, New York, N Y
(For officers, see Northeastern listing)
MISSOURI CLAY FIELDS, Owensville, Mo
R A Parker, supt

AMERICAN CYANAMID
30 Rockefeller Plaza, New York, N Y
BAUXITE MINE in Pulaski co, Ark; Ilmenite

AMERICAN DEVELOPMENT CO
Box 97, Picher, Okla
Mgr: W T Landrum
Heading & slope method
Zn, Pb

AMERICAN SMELTING & REFINING CO
(For officers, see Northeastern listing)
SOUTHWESTERN DEPT, El Paso, Texas
E McL Tittmann, gen mgr
SMELTER at Amarillo, Texas, Zn
E J Bruderlin, mgr
Prod: 58,500 tons
SMELTER at El Paso, Texas, Pb & Cu smelting & converting, Zn fuming
T J Woodside, supt
Prod: 250,000 tons
REFINERY at Corpus Christi, Texas, Electrolytic Zn
C N Waterman, mgr
Prod: 30,000 tons
SAND SPRINGS PLANT, Sand Springs, Okla
Zinc dust
Supt: G E Weekly

AMERICAN ZINC CO of ILLINOIS
Box 477, Dumas, Tex
Pres: H I Young
VP & gen mgr: R A Young
MACHOVEC SMELTER, Zn
W E R Smith, bus mgr
W G Hollifield, purch agt
Karl Langham, gen supt
G Bailey, asst gen supt
J W Burgess, pl engr
O B Thomas, maint engr

ARKANSAS GYPSUM CO
Murfreesboro, Ark
Pres & gen mgr: Vernon B Lewis
GYPSUM MINE in Pike co, Kans
GYPSUM MINE at Murfreesboro, underground, open pit
Prod: 3,000 tons monthly

ARKANSAS LIMESTONE CO
Cushman, Ark
MINE in Independence co, Ark, Mn

B G & O MINING CO
c/o George Brown, Baxter Springs, Kans
BAILEY MINE, Blue Mound dist, Zn, Pb

BAROID SALES DIVISION, NATIONAL LEAD CO
830 Ducommun St, Los Angeles 12, Calif
Gen mgr: George L Ratcliffe
Asst gen mgrs: G B Coale & J W Hoffstetter
Prod mgr: Reginald Rowland
Asst prod mgr: Ed Long
MAGNET COVE PL, P O Malvern, Ark, open-pit, Barytes
GRAV & CHEMICAL CONC MILL
E H Murchison, supt
FOUNTAIN FARM PL, P O Potosi, Mo, open-pit, Barytes
GRAV CONC MILL
Earl Sackett, supt

BARR SURFACE CLEANUP CO
Nance Van Beber, Picher, Okla
BARR SURFACE (Webber Mill) CLEANUP, Blue Mound dist, Zn, Pb

BECK MINING CO
Box 408, Miami, Okla
Pres: Geo W Beck III
VP & gen mgr: R H Beck
BECK #1 MINE, 1½ mi E of Picher, Okla, underground, Pb, Zn
GRAV-FLOT MILL, 1,200 tons per day
Idle
BECK #3 MINE, 1/4 mi W of Baxter Springs, Kans, underground, Pb, Zn
Idle
GRAV-FLOT MILL, 1,500 tons per day
Doing custom milling

BENNETT-CLARK CO, INC
Nacogdoches
Pres: Geo F Clark
MINE, open pit, bleaching clays

BIG YANK MINING CO
Box 96, Picher, Okla
Lyndon Scott

BILHARZ MINING CO
Box 191, Baxter Springs, Kans
Pres: O W Bilharz
Secy-treas: A J Polette, Miami, Okla
MUNCIE MINE, Baxter Springs, Kans, Pb, Zn
R C Wells, mine supt

BLACKHAWK MINING CO
Picher, Okla
BLACKHAWK MINE, Picher-Cardin area, Zn, Pb

BOB WHITE MINING CO
Miami, Okla
BOB WHITE MINE, LITTLE GREENBACK MINE, Picher-Cardin area, Okla; Zn
CHUBB, CHEROKEE & KWASOUR MINES, Blue Mound dist, Kans, Zn, Pb
Prod: 14,000 tons annually

BONANZA MINING CO
610 Cleveland, Baxter Springs, Kans
Wilmer Ingram & Assoc

BRITT & BRITT MILLING CO
Miami, Okla
BRITT MINE in Picher-Cardin area, Zn
Prod: 950,000 tons annually

BURNEY MINE
Presidio, Texas
Owner: E I Burney
Lessee: R I Carr, Shafter, Texas
Ag

C K & E MINING CO
Joplin, Mo
C K & E MINE in Blue Mound-Baxter Springs dist, Zn, Pb
Prod: 25,000 tons annually

C & M MINING CO
Box 229, Baxter Springs, Kans
MINE in Baxter Springs area, pillar & slope method, Zn, Pb
Prod: 3,000 tons

CARDIN MINING & MILLING CO
Picher, Okla
MINES in Picher-Cardin & Blue Mound-Baxter-Treece dists, Zn
Prod: 2,900,000 tons annually

CARPENTER MINING CO
Picher, Okla
Pres: Ella T Carpenter
Mgr: W Luther Marcus
NEW YORK & OKO MINES, in Picher-Cardin area, Pb, Zn
Prod: 70,000 annually

CARSON MINING & MILLING CO
Stotts City, Mo
PEACOCK TAILINGS, near Baxter Springs, Kans, Zn
Prod: 150,000 tons

CARTER, J E, MINING & MILLING CO
Mineral Point, Mo
125-TON BARITE MILL, at Mineral Point
(operated jointly with Superior Mining Co)

CARUTHERS, MRS
Sierra Blanca, Texas
MINE, Hudspeth co, Pb, Ag

CELOTEX CORP, THE
1418 Irwin-Keasler Bldg, 1700 Commerce St, Dallas 1, Texas & 120 South LaSalle St, Chicago 3, Illinois
GYPSUM QUARRY, Fisher co, Texas

CERTAIN-TEED PRODUCTS CORP
120 E Lancaster Ave, Ardmore, Pa
(For officers see Northeastern listing)
MINES in Blue Rapids, Kans & Acme, Texas, underground, Gypsum

CHILDRESS, FRED, & SONS
Box 241, Picher, Okla
H S Childress, mgr
VANATTA MINE, S of Melrose on Kansas-Oklahoma line, Pb, Zn

CHILDRESS-MURPHY MINES, INC
Box 241, Picher, Okla
Mgr: F J Childress
CHILDRESS-MURPHY MINE in Kansas

CHURCHWELL CHEMICAL CO
Gonzales, Tex
Operations in Gonzales co, Pumice, Pumicite

CLARK MINING CO
Mgr: I N Clark, Box 318, RFD #4, Joplin, Mo
OLSEN MINE

CONNER INVESTMENT CO
Secy: G A Wadleigh, 329 Joplin St, Joplin, Mo
MINE in Joplin dist, Zn, Pb

CONSOLIDATED CHEMICAL, INC
640 Mellie Esperson Bldg, Houston, Texas
BAUXITE MINE in Saline co, Ark

CONTACT MINING CO
318 S Main, Picher, Okla
Mgr: W C Hale

CRAIG MINING CO
212 Engineers Bldg, Joplin, Mo
Mgr: F F Craig
Contract mining

CROUCH MINING CO, INC
Box 117, Bauxite, Ark (Subsidiary of General Abrasive Co, Inc, Niagara Falls, New York)
(For officers see Southeastern listing)
CROUCH MINE, RFD 1, Bauxite, Ark, underground & open pit, Bauxite
7-ton-per-hr calcining kiln, Carborundum
Charles Van Ness, mine & mill supt
Anne Redden, met
Capacity: 23,000 tons annually

DALE MINING CO
811 Kentland, Neosha, Mo
Partners: D P Klepinger, G E Klepinger & J A Worley
DALE MINE, Stark City & Pioneer, Mo, Pb, Zn
C E Lawson, mine fore
F E Griffith, mech engr
400-TON GRAV-FLOT MILL
Floyd Cain, mill fore
Prod: 300 tons daily

DEZENDORF MARBLE CO
2900 E 17th St, Box 121, Austin, Tex
SERPENTINE QUARRY, Gillespie co

DINES MINING CO
Baxter Springs, Kans
DINES NUMBER 3 MINE in Century area, Zn Pb
Prod: 30,000 tons annually

DOW CHEMICAL CO, THE
Executive & gen offices: Midland, Mich
TEXAS DIVISION, Freeport, Tex; Magnesium production

DRUNZER, M F
Van Horn, Tex
MINE, Hudspeth co, Cu

DRUNZER & STUMBERG
Van Horn, Tex
MINE in Hudspeth co, Cu, Ag

DRY GULCH MINING CO
Rt 1, Carl Junction, Mo
Supt: Gail Fletcher

DRYER MINING CO
Commerce, Okla
Mgr: Jake Dryer
SOUTH SIDE MINE

DULIN BAUXITE CO
Sweet Home, Ark
MINE in Pulaske co, Bauxite

DUVAL SULPHUR & POTASH CO
1120 Niels Esperson Bldg, Houston 2, Tex
Pres & gen mgr: Geo F Zoffman
VP: Eugene German
ORCHARD MINE, 2 mi SE of Orchard, Tex, Frasch Hot Water Process, Sulphur
R C Mollison, purch agt
J O Tyree, gen supt
K T Stoddard, mine engr

EAGLE-PICHER MINING & SMELTING CO
1st Nat'l Bank Bldg, Miami, Okla
Pres: Elmer Isern
VP: D C MacKallor
Compt: G H Walbert
Dir of mines: J W Chandler
Dir of milling: E H Crabtree, Jr
Dir of personnel: E C Mabon
Dir of insurance: K E Kimmel
MINES in TRI-STATE AREA, Zn, Pb
Office address: Cardin, Okla
H W Harrison, gen mgr
KANSAS
Big John, Leopard, Webber, Westside Number 2, Foley Number 3, & Wilber
OKLAHOMA
Wilson, Blue Goose, Buffalo, Goodeagle Number 3, Gordon, Grace Walker, John Beaver, Lottson, Piokee, Slim Jim, See Sah & Southside Number 2
CENTRAL MILL, Cardin Okla, GRAV-FLOT
ZINC SMELTER, Henryetta, Okla
F G McCutcheon, mgr

ESPERADO MINING CO
Box 1037, Houston, Texas
MINE, Brewster co, Hg

EVANS, F W
Evans Bldg, Joplin, Mo
Owner: F W Evans
SUCKERFLAT MINE, 408 S Liberty St, Webb City, Mo, Pb, Zn
Jack Bolding, mine supt
GRAV MILL, 75-ton hourly
Vincent O Herd, mill fore
SHORTHORN & TOM L LEASES, Picher, Okla, Pb, Zn
John Metcalf, mine supt
Bert Abernathy, asst mine supt

F & G MINING CO
Box 478, Baxter Springs, Kans
Gen mgr & purch agt: E M Fournier
KANSAS LINE MINE, Box 478, Baxter Springs, Pb, Zn
Wm F Houston, mine supt
I R Schloe, elec engr

FARNSWORTH, THELMA
Presidio, Texas
SILVER DOME MINE, Presidio co, Tex; Ag, Pb

FEDERAL JARRETT MINING CO
Box 366, Picher, Okla
Mgr: Martin Thompson

FEDERAL MINING & SMELTING CO
120 Broadway, New York 5, N Y
Pres, ch of bd & dir: Francis H Brownell
VP & dir: Roger W Straus
VP & dir: R F Goodwin
Treas & dir: J C Emison
Dir: Edgar L Newhouse
Compt: E C Corson
Gen audit: Ross Petrie
Secy: J L Martin
Asst compt: H L Goodenough
Asst compt: M M Rosenberg
Asst treas: G S Lott
CENTRAL DIVISION, Pb, Zn
W C Ball, gen supt, Baxter Springs, Kans
OKLAHOMA
Gordon Mine, Howe Mine, Lucky Syndicate Mine, & Quapaw-Davenport Mine
MISSOURI
Duenweg, Granby-American, Granby-Dav... & Granby-McColgin
Prod: over 500,000 tons annually

FOUR MILE MINING CO
c/o V A Walters, Rt 1, Columbus, Kans
MINE & MILL, W of Picher, Okla, Zn, Pb

FOX MINING CO
Treas: J W Woodard, Box 487, Baxter Springs, Kans
ROBINSON MINE, Blue Mound dist, Zn

FRANK HUDSON MINING CO
Picher, Oklahoma
CRAIG LEASE, Picher-Cardin area, Pb

FREDERICKTOWN LEAD CO
Fredericktown, Mo
Pres: Henry Cross
VP & gen mgr: Ewart L Petley
Purch agt: Claude H Slaney
CATHERINE & FLEMING MINES, underground, Pb
James W Huffman, mine supt
GRAV-FLOT MILL
Floyd Rogers, mill supt
Prod: 75 tons daily

FREEPORT SULPHUR CO
1804 American Bank Bldg, New Orleans 5, La
Pres: L M Williams, Jr
VP & gen mgr: E D Wingfield
Purch agt: S L Mayo
SULPHUR MINE at Freeport, Tex
E H McFarland, gen supt
SULPHUR MINE at Hoskins Mound, Tex
G C McMillen, gen supt
SULPHUR MINE at Port Sulphur, La
K T Price, gen supt

FRY MINING CO
Galena, Kans
Supt: Mervin Fry

G & H MINING CO
Picher, Okla
BENNIGARI MINE, Blue Mound dist, Zn, Pb
G B Gregory, supt

GARDNER & CATES
Llano, Texas
MINE, Llano co, Texas, Magnesite

GOOD ENUF MINING & MILLING CO
Office mgr: George L Rutledge, Box 63
Aurora, Mo
GOODENUF MINE, Aurora dist, Lawrence co, Zn

GRACE JARRETTT MINING CO
Box 73, Picher, Okla
Mgr: W A Childress
FEDERAL-JARRETT MINE in Kans

GRAY WOLF MINING CO
366 N Gladys, Picher, Okla
GRAY WOLF MINE, SW of Picher, Okla, Zn, Pb
C S Frisbie, mgr & purch agt
R L Frisbie, mine fore
Prod: 430 tons monthly

H J Y MILLS
Del Rio, Tex
BARITE MINE, Val Verde co

HARDHEAD MINING CO
Galena, Kans
Supt: G Workman

HARDWAY MINING CO
Galena, Kans
Supt: Chas Shead

HARRELD & MARTIN
Galena, Kansas
WYLAND LAND MINE, Galena dist, Zn, Pb

HARRIS MINING CO, INC
440 E 12th St, Baxter Springs, Kans
Pres & gen mgr: Loren Keenan
VP & gen supt: A T Harris
Dir: Robert Nichols
GOLDEN ROD, FARMINGTON, LUCKY JACK MINES
5 mi SW of Baxter Springs, Kans, underground, Zn, Pb
Burl Smith, mech engr
Prod: 80,000 tons yearly
LUCKY JENNY MILL, flot-grav
Capacity: 30 tons per hr
Lymond Smith, mill supt

HAZEL MINE & MILLING CO
c/o A P Williams, Van Horn, Tex
MINE in Culbertson co, Cu, Ag

HECKENBOTTOM, A & W A McCURRY
Harrison, Ark
NORTH ARKANSAS MINE, Zn

HEDGES & HEVER
Compton, Ark
BREWER MINES near Compton, Ark, Pb

HUGHES, W A & SON
1801 S Gronogo St, Webb City, Mo
Gen mgr: W A Hughes
Pb, Zn
20-TON FLOT MILL

HUNT MINING CO
Box 335, Picher, Okla
DOROTHY BILL & ANNA BEAVER MINES, Picher-Cardin area, Zn, Pb

I KNOW MINE
c/o Yates & Baldwin, Chitwood, Mo
OPEN PIT MINE, 1 mi E of Chitwood, Zn, Pb

INDEPENDENT GRAVEL CO
2206 W 4th, Joplin, Mo
Pres: W R Snapp
VP: E C Toutz & R D Toutz
Gen mgr: R D Toutz, Jr
ICE PLANT MINE, 1 mi N of Webb City, Mo, Zn
Prod: 100 tons yearly

IRONCLAD MINING CO
Baxter Springs, Kans
Supt: Louis Edmonds

JEFFERSON LAKE SULPHUR CO
909 Bankers Mortgage Bldg, Houston 2, Tex & Brazoria, Tex
Operations in Brazoria & Fort Bend co, Sulphur

KATE S BRIGGS QUARRY
Box 15, McNary, Tex
GYPSUM QUARRY in Hudspeth co

KEITH, EDGAR, & WILLIAM YORK
c/o St Louis Mining & Milling Corp, Box 508, Joplin, Mo
MINE in Turkey Creek Valley, N of Joplin, open pit, Zn

KELLEY PRODUCTS
1525 19th St, Lubbock, Tex
Operations in Dickens & Scurry co, Pumice Pumicite

LAVRION MINING CO
518 Joplin St, Joplin, Mo
Mgr: Clarence Zuvekas
GARRETT MINE in Kans

LINDA LOU MINING CO
Box 449, Baxter Springs, Kans

LITTLE BEN MINING CO
Box 350, Webb City, Mo
Mgr: Kenneth Childress
HIGH FIVE MINE in Kansas

LITTLE BILL MINING CO
Picher, Okla
Mgr: A W White
DEWITT MINE, Picher-Cardin area, Okla, Pb, Zn

LIZA JANE MINING CO, INC
Box 343, Baxter Springs, Kansas
Pres & gen mgr: R Wayne Love
VP & gen supt: Wm O Shoemaker
Dir: Warren C Estes
LIZA JANE MINE 1 mi W of Baxter Springs, Kans, underground, Zn, Pb
Prod: 75 tons per day

LONE STAR STEEL CO
4501 W Mockingbird Lane, Box 9087, Dallas, Tex
Pres: E B Germany
VP: W H Johnson
Secy: E S Greer
Dir of personnel: David H Abernathy
Dir of purchasing: G C Graves
Gen mgr of operations: W R Bond
Asst gen mgr of operations: T H Hart
Works engr: D B Hooser
LONE STAR ORE MINE, Lone Star, Tex,
W L Kendrick, div supt, ore mines & beneficiation

Frank H Stoualton, supt of steam, power, & hydraulics
A B Drescher, ch engr, mng & exploration
Morris H Melton, supt of repair, construction & railroad maintenance
John J Day, Sr, gen master mech
S F Anders, ch chem
J S Scaff, ch elec engr
Dewey G Burns, supt of coke ovens & by-products
3,000-TON GRAV MILL
A C Melting, supt of beneficiation
1,200-TON FURNACE
Frank G Stark, supt of blast furnace
S Glenn Anderson, asst supt, blast furnace

M & W MINING CO
Baxter Springs, Kansas
FEDERAL BREWSTER, NINETY-SIX & HOLDER MINES, Picher-Cardin area, Zn, Pb

MacARTHUR MINING CO
Baxter Springs, Kans
Pres & gen mgr: J W Hoffman
Dir: Ingbram D Hook
MacARTHUR MINE, 4 mi W of Baxter Springs, Pb, Zn
A F Campbell, mine supt
Roy Campbell, engr
Prod: 150,000 tons yearly

MAGNET COVE BARIUM CORP
Malvern, Ark
MINE in Hot Springs co, Ba

MAHUTSKA MINING CO
Picher, Okla
MINE in Picher-Cardin area, Zn, Pb
Prod: 100,000 tons annually

MARFA MINING CO
Paisano Hotel Bldg, Marfa, Tex
(Subsidiary of Anaconda Lead & Silver Co, Ryan Bldg, Denver, Colo, See Colo listing)

MARK TWAIN MINING CO
Box 241, Picher, Okla
Mgr: W L Childress
BLUE MOUND MINE in Kansas
AZTEC MINE, Picher-Cardin area, Okla, Zn, Pb

MASON, ROBERT
Baxter Springs, Kans
SONNYBOY & BREWSTER MINES, Blue Mound dist Pb, Zn

MATTES & MATTES MINING CO
316 North Joplin St, Joplin, Mo
Pres: E A Mattes
Zn, Pb

McANTIRE, JOHN C
Picher, Okla
CRYSTAL MINE, Picher-Cardin area, Okla, Zn

McINTYRE, WINSTON & ASSOCIATES
Joplin, Mo
DODSON MINE, 3 mi SW of Baxter Springs, Kans; underground, Zn

MELROSE MINING CORP
Mgr: J C Heilman, Box 70, Baxter Springs Kans
PARK WALTON MINE, Melrose area, Ottawa co, Okla, Pb

MID-CONTINENT MUD CO
Pandale, Tex
BARITE MINE, Val Verde co

MILWHITE CO
Cotton Exchange Bldg, Box 801, Houston, Tex
Pres: Max Miller, Sr
Exec VP: F A Frank
VP & gen mgr: A B Willis
CELESTITE MINE in Brown co

MINNESOTA MINING & MFG CO
900 Fauquier Ave, St Paul 6, Minn
ROOFING GRANULATE PLANT & MINE, Little Rock, Ark
Prod: 230,000 tons of granules annually

MISSION MINING CO
c/o Dewey Sims, Box 408, Miami, Okla
Supt: Dewey Sims
CUSTOM MILL & MINE near Quapaw, Okla, Pb, Zn

MISSOURI MINING CO (TRI-STATE ZINC CO, INC)
Picher, Okla
CHITWOOD MINE near Joplin, Mo, Zn
Prod: 500,000 tons annually

MOSS, MRS TILLIE BADU
Llano, Tex
MINE, open pit, Feldspar

NATIONAL GYPSUM CO
325 Delaware Ave, Buffalo, New York
(See Northeastern listing for officers)
MINE & PLANT, Medicine Lodge, Kans; underground, Gypsum
D C Chads, plant mgr
S J Shepler, mine supt
QUARRY & PLANT, Rotan, Texas; Gypsum
J E Irvin, plant mgr
T W Smith, quarry supt

NELLIE B MINING CO
Box 216, Picher, Okla
Pres: J H Buchanan
LAWYERS GROUP, SKELTON GROUP, BARBARA J

NEYLAND, O L
1450 W Magnolia Ave, San Antonio, Texas
GYPSUM QUARRY, Gillespie co, Texas

NORTH END MINING CO
Box 398, Galena, Kans
Supt: B C Rauch

NORTON CO
Worcester 6, Mass
BAUXITE MINE in Saline co, Ark

NORTON PIKE CO
Littleton, N H
NOVACULITE MINE in Garland co, Ark

O & A MINING CO
Galena, Kans
Supt: E O Goede

OLD SHOE MINING CO
Treece, Kans
Supt: Everett Jones

ORONOGO MUTUAL MINING CO
Oronogo, Mo
ORONOGO CIRCLE at Oronogo, Zn, Pb
Prod: 400,000 tons annually

OZARK CHEMICAL CO
Box 449, Tulsa, Oklahoma
Operations, Ward co, Tex, Sodium Sulphate

OZARK MAHONING CO
Box 449, Tulsa 1, Okla
Pres & gen mgr: Park Kelley
BRINE WELLS at Monahans, Tex, Sodium sulphate
R T Lindmark, purch agt
W W Coghill, mine & pl supt

OZARK ORE CO
(M A Hanna Co, operating subsidiary), 1300 Leader Bldg, Cleveland 14, Ohio
Pres & dir: J H Thompson
Exec VP & dir: H L Pierce
VP & dir: P G Harrison
Secy: G W Humphrey
Treas & asst secy: C W Gardner
Asst treas: S L Engel
Gen mgr: R C Fish, Duluth, Minn
MINE at Iron Mountain, Mo; underground, Fe
W F Shinners, supt

PECOS ORLA SULPHUR CO, INC
Orla
Pres & gen mgr: P L Meath, 702 Franklin St, Houston, Tex
MICHIGAN CLAIMS in Orla, open pit, S
C S Lewis, mine & mill supt & res mgr
Prod: 1,500 tons

PELICAN MINING CO
Box 408, Miami, Okla
Mgr: Dewey S Sims
PELICAN MINE

PHELPS DODGE REFINING CORP
40 Wall St, New York 5, N Y
(Subsidiary of Phelps Dodge Corp, Ariz)
OFFICERS of this subsidiary:
Pres: Walter C Bennett
VP's: Cleveland E Dodge, J P Dyer & C S Harloff
Secy & couns: Julian B Beaty
Compt: J Mills Hawkins
Asst compt: Raymond Soden
Treas: H W Urquhart
Asst treas: H R Dobbs
Asst treas: R D Barnhart
TEXAS OPERATIONS: Box 1972, El Paso
EL PASO REFINERY, El Paso
Electrolytic copper refinery & copper sulphate pl; also produces nickel sulphate, selenium, tellurium, zinc sulphate
William Knowles, works mgr
Prod: 240,000 tons annually

POTTER & SIMS
c/o George Potter, Joplin, Mo
JASPER & SNAPP MINES, Jasper co, Zn, Pb
SNAPP MILL

PRIMROSE, HARRY
Ponca, Ark
PRIMROSE MINE, Newton co, Zn, Pb

RANGER CHEMICAL CO
200 Preston Ave, Box 1765, Houston 1, Tex
Operations in Fayette co, Pumice, Pumicite

REYNOLDS MINING CORP
Rt 2, Box 158, Alexander, Ark
Pres: Walter L Nicer
VP & Ch geol: O C Schmedeman
VP & mgr of mines: R H Zeglin
Purch agt: Jerrell W Glover
BAUXITE MINES in Pulaski co, Ark
A F Peterson, surface mine supt
E O Soret, underground mine supt
H T Middlebrook, ch engr

RIALTO MINE
Cardin, Okla
Pb, Zn
40-TON FLOT MILL
Prod: 25,000 tons monthly

RICHEY, GLEN, MINING CO
Webb City, Mo
GRASSELLI OPERATIONS, Waco dist, Zn

ROANOKE MINING CO
c/o W A Brewer, Box 366, Picher, Okla
HOMESTAKE MINE, Blue Mound dist, Zn

ROBINSON MINING CO
Picher, Okla
JARRETT & DOUTHITT MINES in Blue Mound-Baxter Springs dist, Zn, Pb
Small production

ST JOSEPH LEAD CO
250 Park Ave, New York 17, N Y
(For officers see Northeastern listing)
BONNE TERRE, DESLOGE, FEDERAL & LEADWOOD MINES & MILLS in S E Mo, Pb
28,000-TON MILL equipment
Prod: 7,000,000 tons annually, Ore & reclaimed tailings
LEAD SMELTER, Herculaneum, Molyodenum
Prod: 100,000 tons lead annually

ST LOUIS MINING & MILLING CORP
Box 508, Joplin, Mo
Pres: Edwin R Meissner
VP & gen mgr: John A Skinner
Dir: Edwin R Meissner, Jr
Purch agt: C H Isaacs
MINE & CUSTOM MILL at Thoms Station, near Joplin, Zn, Pb
Prod: 160 tons per 8 hrs
GRAV MILL
Capacity: 25-tons per hr
Custom milling only
C O Smith, mill fore

ST LOUIS SMELTING & REFINING DIV OF NAT'L LEAD CO
722 Chestnut St, St Louis 1, Mo
Pres: J A Martino, 111 Broadway, New York, N Y
Mgr: Jean McCallum, St Louis, Mo
MADISON MINES, Fredericktown, Mo
Pb, Cu
W M Lowry, purch agt
A J Yahn, supt
900-TON FLOT MILL
TRI-STATE MINES, Baxter Springs, Kans
H A Krueger, supt

SCOTT MINING CO
Box 29, Baxter Springs, Kans
Pres: F S Elfred, Jr
Mgr: Dr LeRoy Scott
Purch agt: Rex Craig
SCOTT & MARY ANN MINES in Okla, underground, Pb, Zn
C E Kelley, mine supt
C F Leverich, engr
John Potter, elec
GRAV FLOT MILL
W W Williamson, mill supt

SEMPLE, C Y
Baxter Springs, Kans
MARTIN MINE, open pit
3,000-TON GRAV-FLOT MILL
BALLARD MINE, open pit
9,000-TON GRAV-FLOT MILL
MINE in Cherokee co, Kans
Earl N Smith, supt
Roy Pigg, mech engr

SIMMS, C C
Cushman, Ark
MINE in Independence co, Ark, Mn

SMITH, C E
Box 80A1, Rt 2, Miami, Okla
Owner & operator: C E Smith
Mine fore: Ora Black
BAIRD & TAR CREEK MINES, 1/2 mi S of Cardin, Okla, underground, Pb, Zn
Idle
KROPP MINE, 1 mi SW of Hockerville, Okla, underground, Pb, Zn

SMITH, HARRIS S
Box 105, Joplin, Mo
BULLFROG MINE at Joplin, underground & open pit, Pb, Zn
Prod: 75 tons daily

SOONER MILLING CO, INC
Box 385, Picher, Okla
Pres, gen mgr, purch agt, gen supt & mill supt: L R Hill
VP, asst mill supt, mill fore & mill shiftboss: John Norman
Secy-treas & dir: N O Gray
Dir: O L Braden
SOONER TAILING MILL, 1 mi NE of Picher, Okla, Zn, Pb
O E Hatfield, master mech
GRAV FLOT MILL: 3,500 tons Zn, S
SMELTER: 1,500-2,000 tons Zn, 50 tons Pb
Ell T Davis, mill fore & mill shiftboss
E D Shoemaker, mill fore & mill shiftboss
Capacity: 100 tons tailings hourly

SOUTHWESTERN GRAPHITE CO
1025 Security Bldg, Los Angeles 13, Calif
Pres: George W Clemson
VP: Robert P Miller, Sr
Secy-treas: Horace G Miller
Asst secy-treas & mgr: R P Miller, Jr
MINE at Burnet, Texas, open pit
Pete Bibles, mine fore
D C Peacock, ch engr
A B Green, acct
240-TON FLOT MILL
Tom McAllister, mill fore
GRAPHITE CONCENTRATE
Prod: 24 tons

SOUTHWESTERN PORTLAND CEMENT CO
613 El Paso Natl Bank Bldg, El Paso, Texas
GYPSUM QUARRY, Hudspeth co, Texas

SOUTHWESTERN TALC CORP
Llano, Texas
VP: J H Upton
Operations in Llano co, Talc

STANDARD MINING CO
Mgr: Lester Samuels
151 West Main St, Batesville, Ark
MINE, Independence co, Manganese

SUPERIOR MINING CO
Mineral Point, Mo
125-TON BARITE MILL, at Mineral Point (operated jointly with J E Carter Mining & Milling Co)

SWARTZ MINE & MILL
Box 606, Joplin, Mo
Gen mgr: A G Swartz
OPEN-PIT MINE, Pb, Zn
300-TON GRAV MILL
Prod: 300 tons daily

TEXAS GULF SULPHUR CO
75 E Forty-fifth Street, New York 17, N Y
Pres: Walter H Aldridge
Gen mgr: H E Treichler
NEW GULF MINE at New Gulf, Tex
MOSS BLUFF MINE at Liberty, Tex, sulphur
7,500 G T Frasch hot water process
K N Swartz, purch agt
H A Heem, asst gen mgr
C L Orr, asst mgr
A G Wolf, engr
C F Drees, elec engr
W H Preston, mech engr
S W Lowther, mech engr & power house supt
J W Schwab, chem

TEXAS MICA & FELDSPAR CO
Van Horn, Texas
MINE, Culberson co, Mica

TEXAS MINING & SMELTING DIVISION, NATIONAL LEAD CO
Box 559, Laredo, Tex
LAREDO SMELTING WORKS, Sb
D D Niedermeyer, mgr
T E Bourland, asst compt
J K Pimentel, pl supt
V M Estes, ch chem

THOMPSON MINING CO
Galena, Kans
Supt: T M Thompson

TIN PROCESSING CORP
Box 1461, Texas City, Tex
Ch of bd: E Warfield
Pres & gen mgr: A L ter Braake
Exec asst to pres: H F van der Laan
VP & asst gen mgr: S P Lowe
LONGHORN TIN SMELTER, tin, copan
A J McBain, purch agt
J R Winn, gen supt
W L Follett, supt smelter
M K T Heikle, supt experimental dept
W Vierling, ch engr
H H White, ch chem
J W Hoyle, supt ore storage, roasting & leaching
B T Looper, supt maintenance
M L Walker, supt ore storage

TONGAHA MINING CO
Picher, Okla
Pres: C A Miller
Gen mgr: O K Tucker
TONGAHA MINE in Picher-Cardin dist, Zn, Pb
Fred Poor, mine supt
Prod: 15,000 tons annually

TREPANIER, J J
Sierra Blanco, Texas
MARY ELLEN MINE near Van Horn, Culberson co, Cu

UNITED STATES GYPSUM CO
300 W Adams St, Chicago 6, Ill
(For officers, see Calif listing)
MINE at New Braunfels, Tex, open-pit, limestone
TWO MINES at Sweetwater, Tex, open pit, gypsum

VICTORIA GRAVEL CO
Box 1037, Houston, Tex
DOLOMITE MINE at Suddeth
Howard Counts, mine & mill supt
Prod: 2,500 tons

VIVIANA MINING CO
18 Brattle St, Cambridge, Mass
Owner: R W Long
MINE in Brewster co, Tex, Hg

W M & W MINING CO
Box 151, Miami, Okla
Pres: W J Worley
Gen mgr: E G Mattison
VELIE MINE, Cardin, Okla, Pb, Zn

WADE REA MINING CO
Galena, Kans
WADE HUNTER MINE, Quapaw area, Pb, Zn
Otis Wade, mgr
Small production

WARD MINING CO
Baxter Springs, Kans
Supt: Buford Ward

WESTMORELAND MANGANESE CORP
Gen supt: H E McBride
Batesville, Ark
MINE, Independence co, Manganese

WILDWOOD MINING CO
Joplin, Mo
Mgr: Geo W Potter
WILDWOOD MINE
NORTHSIDE MILL

WILLIAMS, A P
Allamore, Texas
SANCHO PANZA MINES, Hudspeth co, Texas, Cu

ZINCVILLE MINING CO
Picher, Okla
CHUTCHFIELD MINE, Picher-Cardin area, Okla, Zn

SOUTHEASTERN
Ala, Fla, Ga, Miss, N C, S C, Tenn

ADDERLEY, J C, & ASSOCIATES
Molino, Fla
J C Adderley
Phosphate

ALABAMA FLAKE GRAPHITE CO
Comer Bldg, Birmingham, Ala
MINE & MILL at Ashland, Ala
W L Moore, mgr

ALABAMA MINERALS CO
Bluffton, Ala
Fe

ALBEA YORK MINING CO
Cedartown, Ga
Pres: Albea York
Fe

AMERICAN COLLOID CO
Merchandise Mart Plaza, Chicago 54, Ill
Pres: Paul Bechtner
VP: Wm D Weaver
Purch agt: Roy H Harris
PANTHER CREEK MINE 20 to 35 mi W of Aberdeen, Miss; placer, Bentonite
Claud Acord, mine & mill supt
Arthur G Clem, ch chem
MILL
Prod: 30,000 tons annually

AMERICAN AGRI CHEM CO, THE
50 Church St, New York, N Y
Pebble phosphate rock, Pierce, Fla

AMERICAN CYANAMID
30 Rockefeller Plaza, New York, N Y
SADDLE CREEK MINE, Brewster, Fla, open-pit phosphate-rock
3,000-TON GRAV-FLOT MILL
SYDNEY MINE, Brewster, Fla; open-pit, phosphate-rock
1,800-TON GRAV-FLOT MILL
Arthur Crago, mgr of Brewster operation

AMERICAN ZINC CO OF TENNESSEE
Mascot, Tenn
Pres: Howard I Young
Gen supt: H A Coy
Asst gen supt: William Black
Purch agt: C C Sisk
MASCOT NUMBER 2 MINE at Mascot, Tenn; Zn
GRASSELLI MINE at New Market, Tenn; Zn
JAHNAGIN & ATHLETIC MINES at Jefferson City, Tenn; Zn
W J Langley, mine supt
W H Johnson, engr
I C Mitchell, mech & elec engr
Harold Thompson, safety engr
C R L Oder, ch geol
FLOT, HMS, JIG MILLS
D B Grove, mill supt
R B Brackin, asst mill supt
Jim Polhemus, met
D K Chadwick, assy
Capacity: 4,000 tons daily
Prod: 3,800 tons daily

APPALACHIAN ZINC CO
Embreville, Tenn
Pres: W B Wiggins
Pb, Zn
Idle

ARMOUR FERTILIZER WORKS
Columbia, Tenn
W B King, supt
Phosphate rock

ARRINGTON MINING CO
Cedartown, Ga
Pres: C B Arrington
Fe

BARTOW MINING CO
Cartersville, Ga
Owner: George Shropshire
Fe

BEE TREE VERMICULITE MINES, INC
Tigerville, S C
Vermiculite

BOYD MINE
(See Tennessee Copper Co)

BRADLEY ESTATES, INC
Floral City, Florida
Soft phosphate or colloidal clay

BURRA MINE
(See Tennessee Copper Co)

CALLOWAY MINE
(See Tennessee Copper Co)

CLINCHFIELD SAND & FELDSPAR CO
618 Mercantile Trust Bldg, Baltimore 2, Md
MINE at Kings Creek, S C; talc & soapstone

COLLOIDAL PHOSPHATE SALES CO
Box 1588, Tampa 1, Florida
MINE is 1 mi E of Dunnellon, Marion co, Fla; surface, Colloidal, Phosphate
Pres: Chris Fagg
VP: E P Fagg
Secy-treas & gen mgr: George T Dyer
HAMMERMILL

COMMERCIALORES CO
Pres & mgr: Albert R Eckel
MINE, Clover, S C, Kyanite

CONSOLIDATED HIGH GRADE ORE CO
Cleveland, Tenn
Partner: C W Johnson
WASHED, SCREENED & JIGGED Mn & high grade Fe
Prod: 30 tons daily

CORONET PHOSPHATE CO
Plant City, Florida
Land pebble phosphate

DAVISON CHEMICAL CORP, THE
Davidson Chemical Bldg, Fayette & Charles St, Baltimore 1, Md
Pres: C F Hockley
VP: G M Hebbard
Div mgr: A T Cole
PHOSPHATE ROCK DIV, Box 471, Bartow, Fla; open-pit, phosphate rock
C A Pierce, purch agt
J M Harris, personnel mgr
E C Welchel, Jr, Asst mgr & supt of mines
E J Purcell, mine supt
B P Jones, mine supt
E L Chapman, maint supt
J W Pamplin, ch engr
C D McDowall, ch chem
W H Hallman, elec
J R Terry, safety engr
FLOT MILL
C B Blood, mill supt

DELLINGER & DUCKETT
Niota, Tenn
Partner: Tom Duckett
Barite

ELECTRO MANGANESE CORP
Knoxville, Tenn
Pres & gen mgr: E M Wanamaker
REFINERY producing Electrolytic manganese metal

EUREKA MINE
(See Tennessee Copper Co)

EUTAW DEVELOPMENT CO
Cartersville, Ga
Mgr: H Styskal
Fe

FARMER CONSTRUCTION CO
Columbia, Tenn
Supt: W B King
Phosphate Mining

FEDERAL CHEMICAL CO
Mt Pleasant, Tenn
Mgr: D S Miller
WASHED & DRIED RAW PHOSPHATE ROCK

GAMMAGE MINING CO
Cedartown, Ga
Fe

GENERAL ABRASIVE CO, INC
Niagara Falls, New York
Pres: Alan V Parker
VP: Robert MacDonald, Jr
Geol & Mgr of Mines & Mill: L M Richard
KINGSTON MINE 3 mi from Kingston, Ga; Bauxite ore & Carborundum
Under dev

GLIDDEN COMPANY
Lenoir, N C
MINE at Lenoir, Ilmenite (Ti)

HARSH PHOSPHATE CO
Nashville, Tenn
Mgr: H G Harsh
Raw ground phosphate rock

HODGE MINING CO
Cartsville, Ga
MINE in Bartow co, open pit, Fe

HOOVER & MASON PHOSPHATE CO
Mt Pleasant, Tenn
Pres: H Earl Hoover
Gen mgr: R S Morrison
Dir: W P Hudson
Purch agt: O M Runnebaum
MINE at Mt Pleasant, open-pit, phosphate-rock
Edgar Brown, mine supt
Wm M Carroll, Sr, elec engr
600-TON GRAV MILL
W F Huff, mill supt
J A Scott, assy
Prod: 600,000 tons annually

HOWARD PHOSPHATE CO
(Partnership)
Box 3028, 1632-34-36 Chicago Ave, Orlando, Fla
Gen mgr: R M Howard
MINE at Inverness, Fla; open-pit, 200-ton bucket dredge, soft, colloidal & hard phosphate
W E Marlow, mine & mill supt

HUMPHREYS GOLD CORP
First Nat'l Bank Bldg, Denver 2, Colo
SUCTION PLACER MINE near Jacksonville, Fla; Ilmenite, Rutile, Zircon & Monazite
HYDRAULIC FLOT OPERATION
Prod: 50,000 tons yearly
Owner: Rutile Mining Co, Fla
SUCTION PLACER MINE near Starke, Fla; Ilmenite & Zircon
Owner: DuPont Nemours & Co

INDUSTRIAL MINERALS INC
Mgr: L W Wilson, York, S C
MINE, Kings Creek, S C, Sericite & barite

INTERNATIONAL MINERALS & CHEMICAL CORP
20 N Wacker Drive, Chicago 6, Ill
(For officers see Mont listing)
PHOSPHATE MINES in Florida & Tenn

KELLOGG CO, THE
920 Franklin St, Ocala, Fla
Soft phosphate or colloidal clay

KIBLER-CAMP PHOSPHATE ENTERPRISE
Ocala, Fla
Gen mgr: D B Kibler, Jr
Dir: Clarence Camp, II
SECTION 12 MINE, Dunnellon, Fla; open-pit, hard-rock phosphate
T D Felton, mine supt
N T Farrell, asst mine supt
Prod: 6,000 tons monthly

KIMBRO PHOSPHATE CO
Centerville, Tenn
F C Kimbro
Crude phosphate

LAKELAND PHOSPHATE & FERTILIZING CO
Bartow, Fla
H P Lindenfelser
Phosphate

LONCALA PHOSPHATE CO
Box 338, High Springs, Fla
Soft Phosphate with colloidal clay

MINERAL MINING CORP
Pres & mgr: Frederick C Bingham
MINE near Kershaw, S C, Sericite & Mineralite

MONSANTO CHEMICAL CO
1700 S Second St, St Louis, Missouri
Pres: William M Rand
VP: C A Thomas
Dir: R R Cole
MINE 8 mi SW of Columbia, Tenn; open-pit dragline excavation, Phosphate rock
J L Christian, gen mgr, Phos Div
E L Sanderlin, purch agt
E J Block, pl mgr
H A Webster, mine supt
E W Miles, asst mine supt
R B Shaffer, mine engr
W C Robbins, mech engr
R L Van Fossen, elec engr
A N Allen, safety engr
GRAV MILL
ELECTRIC FURNACE, capacity 25,000 kw, yellow phosphorus

NEW RIVERSIDE MINING CO
Cartersville, Ga
Pres: Ray Dillinger
Barite & umber

OWEN AGRICULTURAL PHOSPHATE CORP
Co[illegible]rville, Tenn
Grou[illegible] phosphate rock

PRAIRIE STATE PHOSPHATE CO
Co[illegible]rville, Tenn
Grou[illegible] phosphate rock

REPUBLIC MINING CO (Alcoa)
Eufaula, Ala
Mine: & shippers of bauxite, near Eufaula
Mgr: Karl Wilson

REPUBLIC STEEL CORP
Republic Bldg, Cleveland 1, Ohio
(For company officers, see North Central listing)
EDWARDS MINE at Birmingham, Ala; underground, Fe
B H McCrackin, mgr at Birmingham
B C Jones, mine supt
W J Donohue, ch engr
R B Watt, mng engr
C A Owens, elec engr
Prod: 500,000 tons yearly
SPAULDING MINE at Birmingham, Ala; underground, & open pit, Fe
C H Dewey, mine supt
A P Helleke, asst supt
W J Donohue, ch engr
R B Watt, mng engr
C A Owens, mech engr
Prod: 400,000 tons yearly; 250,000 tons conc yearly from gravity conc

RIVER & RAIL PHOSPHATE CO
135 2nd Ave North, Nashville, Tenn
Pres, gen mgr, mng engr & elec engr: L H Jordan
Secy: S E Wheeler
Gen supt, mill supt & fore: Claude Warren
MINE 6 mi NW of Nashville, Tenn; open pit, dragline, raw phosphate
Geo Prince, mine fore
PLANT at Jordonia, Tenn

RIZ MINERAL CO
305 Park St, West Palm Beach, Fla
Ilmenite, Rutile, Zr

RUHM PHOSPHATE & CHEMICAL CORP
Mt Pleasant, Tenn
Pres: Oliver M Babcock
Finely ground phosphate rock

RUTILE MINING CO OF FLORIDA
111 Broadway, New York 6, N Y
MINE, South Jacksonville, Fla; open pit, (See Humphreys Gold Corp)

SEA BOARD PHOSPHATE CO
Dunnellon, Fla
Soft phosphate or colloidal clay

SHOOK & FLETCHER SUPPLY CO
1814 1st Ave, Birmingham, Ala
Miners & shippers of brown iron ores
Gen supt of mines: A M Shook III

SLOSS-SHEFFIELD STEEL & IRON CO
Birmingham, Ala
Pres: C S Lawson
VP: Wm Neal
Purch agt: H E Cross
Gen supt: T E Costner
LaGRANGE & RUSSELLVILLE MINES NUMBERS 5 & 12, open, Fe
RUSSELLVILLE NUMBER 14 MINE 2 mi E of Russellville, Ala, open pit, dragline, Fe
S A Britton, mine & mill supt
Roy Shirley, asst mine supt
Hobart Norton, mine fore
R M Tate, mine engr
L E Shiffman, elec engr
W L Adamson, mech engr
J A Downey, safety engr
Jack Morris, geol
RMS MILL
Paul Wallcott, met

SOIL BUILDERS, INC
Dunnellon, Fla
Soft phosphate or colloidal clay

SOUTHERN MICA CO
Johnson City, Tenn
Pres & gen mgr: Mrs D B Rice
VP & purch agt: C Bailey Rice
Dir: Martha R McClain
Gen supt & mill supt: J F Reynolds
SOUTHERN MICA MINE 5 mi from Burnsville, N C: open pit, hydraulic, Mica
Geo W Edge, mine supt
Charlie C Hall, asst mine supt
Ira Cole, Haskel Garland, Albert Hodge, shiftbosses
SMELTER:
Prod: 9,000 tons yearly output

SUPERIOR PHOSPHATE CO
Box 476, Dunnellon, Fla
SOFT PHOSPHATE & COLLOIDAL CLAY OPERATIONS

SWIFT & CO
U S Yards, Chicago, Ill
Land pebble phosphate operations, Bartow, Fla

TENNESSEE COAL, IRON & RAILROAD CO
Brown Marx Bldg, Birmingham, Ala
Pres: Robert Gregg
VP in charge of operations: A V Wiebel
Mgr of raw material & mng: R E Kirk
Asst mgr: J C Gray
IRON MINES & FURNACES near Birmingham & Bessemer, Ala
E H Rose, in charge of beneficiation research
A J Beck, Jr, gen supt of ore mines & quarries
P C Zukow, supt of Ishkoode Div
G M Neal, supt of Muscode Div
J G Creveling, supt Wenonah Div
G B Neal, supt of quarries
C B Cameron, supt ore pl

TENNESSEE COPPER CO
61 Broadway, New York 6, N Y
Pres: E H Westlake
BURRA BURRA, EUREKA, BOYD, CALLOWAY & MARY MINES at Copperhill, Tenn
Au, Ag, Cu, Zn, Fe
C H McNaughton, prod mgr
T A Mitchell, gen mgr
P Norton, bus asst
L Weaver, mine supt
H F Kendall, asst mine supt
3,000-TON FLOT MILL
J F Myers, mill supt
F M Lewis, asst mill supt
Prod: 1,000,000 tons yearly

TENNESSEE VALLEY AUTHORITY
Knoxville, Tenn
AKIN MINE Box 73, Columbia, Tenn: open pit, dragline, Phosphate
GRAVITY OPERATION
Prod: 400,000 tons yearly

THOMPSON-WEINMAN CO
Cartersville, Ga
Barite

TUNGSTEN MINING CORP
Box 81, Henderson, N C
Pres: R S West
VP: W L Long
Gen mgr: J R Sweet
Secy-treas: M V Dorr
Purch agt: G V Boyd
HAMME MINE 16 NW of Henderson, N C; underground, WO3
R M Richmond, mine supt
Fred Conley, mine fore
A M Szymlewski, mine engr
W F Edwards, elec engr
340-TON GRAV-FLOT MILL
J V Hamme, mill supt
Lee Angel, mill fore
W M Furman, assy
Prod: 300 tons daily

UNIVERSAL EXPLORATION CO
Birmingham, Ala
Pres: Arthur V Weibel
Gen supt: E B Jennings
MINE at Jefferson City, Tenn; Zn
300,000-TON FLOT MILL

VICTOR CHEMICAL WORKS
Tarpon Springs, Fla
F B McCoy & R Weigel
Phosphoric compounds

VIRGINIA-CAROLINA CHEMICAL CORP
Box 1797, Richmond 14, Va
Pres: J A Howell
VP: C E Helbrichs
TENNESSEE MINING DEPT, Mt Pleasant, Tenn
open-pit, dragline, phosphate
R J Grissom, mgr
Capacity: 1,500 tons daily
FLORIDA MINING DEPT, Nichols, Fla: phosphate
H L Pascoe, mgr
FLOT MILL, 7,500 tons daily capacity

WILSON, DUEL M
Eufaula, Ala
Bauxite

WOOD, BEVERLY C
Sweetwater, Tenn
Barite

WOOD, L A
Sweetwater, Tenn
Pres: L A Wood
Barytes

WOODWARD IRON CO
Woodward, Ala
Pres: B C Colcord
VP: Hewitt Smith
Purch agt: S E Stokes
FYNE MINE 8 mi SW of Bessemer, Ala
underground, Fe
T W Davis, mine supt
W H Thompson, asst mine supt
J W Hager, mine engr
C W Phillips, mech engr
E P Winters, elec engr
S N Mooney, safety engr
SLOSS-SHEFFIELD STEEL & IRON CO (See listing)

YACKIN MICA & ILMENITE CO
(Div of the Glidden Co), Box 815, Lenoir, N C
Gen mgr: H L Rhodes
MINE, open-pit, Ilmenite
100-TON GRAV MILL
Prod: 30,000 tons yearly

ZONOLITE COMPANY
135 S LaSalle St, Chicago 3, Ill
(Officers listed under Zonolite Co, Mont)
MINE & PLANT, Travelers Rest, S C, open-pit, Vermiculite
J A Kelly, mgr

NORTHEASTERN

Conn, Del, Illinois, Ind, Ky, Maine Mass, Md, N H, N J, N Y, Ohio, Pa, Rhode Island, Vt, Va, W Va

ALAN WOOD STEEL CO
Conshohocken, Pa
Pres: J T Whiting
VP: C E Davis
Purch agt: G H Lange
Gen supt: W P Schenck
SCRUB OAKS MINE, 6 mi NW of Dover, N J, underground, Fe (Magnetite)
J E MacFarlane, mine supt
Chas Weiler, mine fore
Walter McDougal, mine engr
Chas Kuhn, safety engr
MAGNETIC GRAV MILL
Harry Hendershot, mill fore
Sam Shukailo, mill shiftboss
Chas Tygor, mill shiftboss
Kenneth Bruland, assy

ALBERNE STONE CORP OF VIRGINIA
Schuyler, Va
SCHUYLER, Schuyler, Va

ALCOA MINING CO
Fluorspar Div, 1500 Mississippi Valley Trust Bldg, St Louis 1, Mo
VP in chg: A B Williams
Gen mgr, Fluorspar Div: F A Pickes
Works mgr: W S Skeels
HUDSON MINE, Salem, Ky, Zn
FAIRVIEW MINE, Rosiclare, Ill, Pb, Zn, fluorite
J K Chambers, purch agt
W H Harrison, mine supt
S G Bousman, engr
H E Efner, mech engr
A H Sutton, geol
RMS & FLOT MILL
W C Lay, mill supt & metallurgist
V C McDonald, assy
Prod: 5,000 tons monthly from development

ALLIED CHEM & DYE CORP GENERAL CHEMICAL DIVISION
40 Rectory St, New York 6, N Y
Pres: H O C Ingraham
VP: M M Biddison
Purch agt: P S Scherzinger
Dir mng operations: R H Dickson, 40 Rector St, New York, N Y
Gen supt: Wilbert J Trepp, Box 228, Boulder, Colo
Geol: D C Wysor
Met: George H Husson
SOGSAN MINES, Galax, Va, Pyrite
Fred Johnson, supt
F

AMERICAN CYANAMID
30 Rockefeller Plaza, New York, N Y
CALCO CHEM DIV, Piney River, Va, Ilmenite

AMERICAN SMELTING & REFINING CO
120 Broadway, New York 5, N Y
GENERAL OFFICERS:
Ch of bd: Roger W Straus
Pres: Kenneth C Brownell
Ch of fin comm: John C Emison
VPs: Edgar L Newhouse, Jr, R P Goodwin, J D MacKenzie, Simon D Strauss, E W Thornley, J R Woodul & C W Tuckwood
VP & gen couns: R Worth Vaughan
Treas: Oscar W Straus
Comp: E C Corson
Gen audit: H W Grose
Secy: G A Brockington
ADVISORY COMMITTEE:
Cons met: E P Fleming
Ch lead ref met: E Harms
Mgr ore purch dept: R L Jourdan
Patent couns: James K Kent
Gen mgr zinc dept: S H Levison
Dir res dept: A J Phillips
SMELTING & REFINING DEPT:
VP: J D MacKenzie
Asst to pres: R P Reese, Jr
Gen mgr zinc dept: S H Levison
Mgr ore purch dept: R L Jourdan
Mgr opr West mng dept: J Fred Johnson
Cons met: E P Fleming, Salt Lake City, Utah
Ch lead ref met: E Harms, Perth Amboy
Cons: W J O'Connor
MINING DEPT:
VP: R P Goodwin
Cons engr, N Y: H A Kursell
Gen mgr, N Y: W W Loerpabel
Res engr, N Y: C P Pollock
Res engr, N Y: V I Mann
Gen mgr, West mng dept, Salt Lake City, Utah: D J Pope
Ch geol West mng dept, Salt Lake City, Utah: W R Landwehr
Mgr opr West mng dept: J Fred Johnson
Expl engr West mng depts: L H Hart
Mill engr West mng dept: Norman Weiss
Mgr SW Div West mng dept: F V Richard
PURCHASING DEPT
VP: E W Thornley
ENGINEERING DEPT:
Cons engr West eng dept: C C Burt, Garfield, Utah
Ch engr West eng dept: B A Marriott, Garfield, Utah
Ch power engr, West eng dept: P K Richardson
Ch engr Pacific Coast eng dept: R B Muse, San Francisco
RESEARCH DEPT:
Dir: Dr A J Phillips
Supt: A A Smith, Jr
SMELTERS & REFINERIES:
Ariz, Calif, Colo, Ill, Md, Mont, Nebr, N J, Okla, Tex, Utah, Wash
MINES:
Ariz, Colo, Idaho, Kans, Mont, New Mex
BALTIMORE PLANT: Baltimore, Md
Mgr: H M Shepard
Gen supt: L J Leckie
Copper refining
FEDERAL PLANT: Federal, Ill
Mgr: L J Buck
Supt: James H Vose
Lead smelting
PERTH AMBOY PLANT, Barber, N J
Mgr: K Harms
Asst mgr: B J Di Santo
Copper smelting, converting & refining, lead smelting & refining

AMERICAN STEEL & WIRE CO
Rockefeller Bldg, Cleveland 13, Ohio
DONORA ZINC WORKS, Donora, Pa, Zn

AMERICAN ZINC CO OF ILLINOIS
Pres: H I Young
Gen mgr: Robert Annon
Mgr: H W Curry
Purch agt: C T Millice
ZINC SMELTING & PROCESSING PL
H R Wampler, pl supt
J P Clark, met div supt
H J Collett, gen fore
M A Bonadurer, mech engr
Oscar Hassell, met
Orville Rutledge, assy
G H Parkes, packaging & shipping fore
Annual production:
12,800 tons, Amer-process zinc oxide
2,700 tons French-process zinc oxide
7,150 tons slab zinc

AMERICAN ZINC OXIDE CO
(Subsidiary of American Zinc & Lead Smelting Co)
Box 327, Columbus, Ohio
COLUMBUS PL, Columbus, Ohio: Zn

ASHLEY MINING CORP
West Rumney, N H
Pres: H A Ashley
VP & mine engr: E M Shipp
Dir: H H Shedd
BERYL MT MINE, Acworth, N H; also Lot #10, Palermo, Burgess & Ashley #1 Mines in Grafton Co, open pit, Beryl, Feldspar, Mica, Quartz & Columbite

BARRY, W J
453 Cummins Highway, Rosendale 31, Mass
ROSLENDALE, Suffold co, Mass, Feldspar, Mica, Quartz

BARTON MINES CORP
N Creek, Warren co, N Y
Pres: H H Barton
VP (engr) & gen mgr: H H Vogel
Asst gen mgr: C H Barton, Jr
Purch agt: T Leonard
GARNET MINE near N Creek, N Y, open-pit
RMS GRAV-FLOT MILL
Capacity: 3 tons of garnet per hour

BASIC REFRACTORIES, INC
845 Hanna Bldg, Cleveland 15, Ohio
Pres: H P Sells, Jr
Purch agt: G H Rutherford
Mgr of operations: T W Ryan
Works mgr: M Muller
MAPLE GROVE QUARRY & PLANT, Maple Grove, Ohio, open pit, Dolomite, basic refractories
H C Bonnell, mine supt
A M Caito, pl supt
G E Stone, pl engr
Prod: 1,800,000 tons yearly

BETHLEHEM CORNWALL CORP
701 E Third St, Bethlehem, Pa
Pres: A F Peterson
Mgr: S J Shale
CORNWALL MINE at Cornwall in Lebanon co, Pa
Fe, Cu, Au, Ag
6,000-TON MAGNETIC CONCENTRATOR
2,500-TON FLOT PL
2,000-TON SINTERING PL
Prod: 1,000,000 tons annually

BLUE RIDGE TALC CO, INC
c/o C G Kitson, Henry, Va
KING-RAMSEY, Henry, Va, talc

BUTLER & MOODIE
Salem, Ky
KLONDIKE TAILING MILL, Salem, Ky, F

C & L FLUORSPAR CO
Marion, Ky
F

CAROLINA MINERALS CO, INC
Box 415, Bedford, Va
HARRIS NUMBER 2, Watson, Johnson & Scott, Cox Property, Bedford co, Va & Piney River, Piney River, Va; Feldspar, Mica & Quartz

CAYUGA ROCK SALT CO, INC
Myers, N Y
MINE, Myers, N Y, salt

CELOTEX CORP
120 S LaSalle St, Chicago 3, Ill
AMERICAN NUMBER 1 MINE, Port Clinton, Ohio, gypsum

CERTAIN-TEED PRODUCTS CORP
120 E Lancaster Ave, Ardmore, Pa
Pres: Rawson G Lizars
VP: P E Fischer
VP: C K Hobson
VP: J V Lizars
Purch agt: J I Trolley
Operations in Clarence Center, N Y
underground, Gypsum

CLINCHFIELD SAND & FELDSPAR CO
618 Mercantile Trust Bldg, Baltimore 2, Md
MINE at Marriotsville, Md, talc & soapstone

CONYER, L
Marion, Ky
CONYER MILL, Salem
F

COPPER RANGE CO
Houghton, Michigan; 24 Federal St, Boston 10, Mass
Pres: Morris P LaCroix
Asst to Pres: Harold B Ewoldt
VP: Ralph W Myers
VP: John P Lally
VP: Phillip P Beaudin
VP: Frank A Ayer
Treas: David M Goodwin
Compt: Robt McArthur
Secy: J Roland Ackroyd
Asst treas: Henry Combellack
Asst treas & asst secy: J S Leonard
Asst secy: Wm P Nicholls
Asst secy: Harold L Blaisdell
C G HUSSEY & CO DIV (Copper & Brass Rolling Mills)
Pittsburgh, Pa
J P Lally, VP & div gen mgr
John G McNeely, purch agt
Edwin H Seiling, sales mgr
William Glenn, credit mgr
Charles E Pearl, pl supt
James Malok, refinery supt
Andrew Herpak, master mech
Charles H Wilson, ch elec

CRIDER & CRIDER
c/o Hobart Crider
Marion, Ky
REITER MINE, Mexico, Ky; Fluorspar

CRIDER BROS FLUORSPAR CO
Mexico, Ky
Partners: J Willis Crider & Wm H Crider
Gen mgr & mill supt: Billie M Travis
MARBLE MINE 6 mi NE of Fredonia, Ky, underground, Fluorspar
GRAV-FLOT MILL

CRYSTAL FLUORSPAR CO, INC
Box 183, Elizabethtown, Ill
Pres: Macy Nicholson
Gen mgr: Miles Haman
Mgr: D G Gibson
Purch agt: E E Glenn
MINE, underground, Fluorspar
H A Partain, mine supt
D R Holbrook, engr
180-TON SINK-FLOAT MILL
I V Robertson, mine & mill supt
R D Cox, assy

DAVENPORT MINES, INC
Marion, Ky
F

DELHI FLUORSPAR CORP
Marion, Ky

DOMINION MANGANESE CORP
135 Broadway, New York 6, N Y
OLD DOMINION MINE, Waynesboro, Va, Mn

DUPONT DE NEMOURS, E I & CO
Room 12062 Dupont Bldg, Wilmington 98, Del
MEADOWBROOK PL, Spelter, W Va; Zn

EASTERN MAGNESIA TALC CO
206 Bank St, Burlington, Vt
JOHNSON NUMBER 4, Johnson, Vt
NUMBER 2, Waterbury, Vt; talc & soapstone

EBSARY GYPSUM CO, INC
45 Exchange St, Rm 718, Rochester 4, N Y
Treas: F W Allen
WHEATLAND MINE, Nomford, N Y, gypsum
SCOTTSVILLE MILL

ELIZABETH MINE
(See Vermont Copper Co)

GLASS FLUORSPAR CO
Princeton, Ky
Pres: C B Meadows
MEADOWS MINE, Princeton, Ky; Fluorspar

GLIDDEN COMPANY
Lenoir, N C
TITANIUM DIOXIDE PLANT at Baltimore, Md

GOLDING KEENE CO
Box 2151, Tenton 2, N J
COLONY & KIDDOX MINES, Alstead, N H; Feldspar, Mica, Quartz

GOUVERNEUR TALC CO, INC
Box 176, Gouverneur, N Y
MINE at Gouverneur, N Y, talc & soapstone

GRAPHITE MINES, INC
Box 92, Auburn Station, Cranston, R I
Treas: Peter T Kaine
Operations in Providence co, graphite

HANNA COAL & ORE CORP
1300 Leader Bldg, Cleveland 14, Ohio
Pres: J H Thompson
Gen mgr: H C Fish
Supt: W F Shinners
MINE at DeGrasse, New York, Fe
Capacity: 175,000 tons of concentrates per year

HARTFORD TALC & QUARTZ CO
Bel Air, Md
MINE at Doublin, Md, talc & soapstone

HECKS CREEK FLUORSPAR MINING CO
Elizabethtown, Ill
DOUGLAS MINE, Pope co, Ill; Fluorspar

HEGELER ZINC CO, THE
Danville, Ill
DANVILLE SMELTER, Danville, Ill; Zn

INTERNATIONAL SALT CO, INC
Retsof, N Y
Pres: Edw L Fuller, Scranton, Pa
VP: H M Griffith, Scranton, Pa
VP: H Osborn, New York, N Y
RETSOF MINE 4 mi W of Geneseo, N Y
underground, rock salt
T F Courthope, gen mgr, Retsof, N Y
J A Cooney, purch agt, Retsof, N Y
S Martin, plant mgr, Retsof, N Y
H Goetz, mech engr
D L Moynes, elec engr

INTERNATIONAL SMELTING & REFINING CO
RARITAN COPPER WORKS
PERTH AMBOY SMELTER, Perth Amboy, N J; Cu

INTERNATIONAL TALC CO, INC
Box 296, Gouverneur, N Y
FREEMAN MINE, Talcville, N Y, underground
NUMBER 3 & WIGHT MINES, Gouverneur, N Y, underground, talc & soapstone

JONES & LAUGLIN ORE CO
Star Lake, N Y (Subsidiary of Jones & Laughlin Steel Corp)
Ch of board: Admiral Ben Moreell
Pres: C C Henning
Gen supt: W R Webb
Asst gen supt: R G Fleck
BENSON MINES, 32 mi E of Gouverneur, N Y, open pit, Fe
Einer Smeby, mine engr
W P Bach, gen mine fore
Carl Djuvik, mech engr
J F Peterson, electrical engr
M D Peterson, safety engr
P L VerSteeg, master mech
G E Alter, industrial engr
R M Crump, geol
CONCENTRATOR
W A Vickers, gen mill fore
R E Durocher, met
Capacity of Concentrator: 1,000,000 gross tons per year
SINTER PLANT
R W West, sinter pl supt
Capacity of Sinter: 790,000 gross tons per year

KENNECOTT COPPER CORP
120 Broadway, New York 5, N Y
(For complete listing see Utah)

KENTUCKY FLUORSPAR CO
Marion, Ky
F

LOOMIS, W H, TALC CORP
223 E Main St, Gouverneur, N Y
ARNOLD NUMBER 1, WOODCOCK NUMBER 3 & ONTARIO NUMBER 4, Gouverneur, N Y, talc & soapstone

MARYLAND MINING CO
Rt #3, Bethesda 14, Md
Owners & operators: Huntley Ingalls & Edgar T Ingalls
MARYLAND MINE

MATTHIESSEN & HEGELER ZINC CO
LaSalle, Ill
LaSALLE WORKS, LaSalle, Ill; Zn

MINERVA OIL CO
Mining Div: Myers Bldg, Eldorado, Ill
Pres: J Desloge
Gen mgr: J H Steinmesch
Secy: Berkley Jones
Purch agt: S J Kelly
MINE NUMBER 1, Rt 2, Cave-in-Rock, Ill; Zn & Fluorspar
Gill Montgomery, gen supt
F C Callahan, mine fore
Joe Doggett, asst mine fore
Cy McConnell, power fore
George Jenkins, ch elec
Chester W Shaw, geol
Claud Scott, yd fore
Ulys P Douglas, ch mech
W J Young, mech engr
300-TON FLOT MILL
O E Anderson, mill supt
Herman Stum, mill fore
C B Rash, assy
D C Spees, met
Prod: 300-tons daily

NATIONAL GYPSUM CO
325 Delaware Ave, Buffalo 2, N Y
Pres: M H Baker
Exec VP: L R Sanderson
VP in ch of mfg: F A Manske
VP in ch of sales: D D Crandell
VP in ch of finance: C E Masters
VP in ch of contract sales: J C Best
Treas: W S Corrie
Secy: W M North
Compt: R H Means
Purch agt: E T Obenchain
Chief engr: S D Skinner
Supv of mines & quarries: D E Eilertsen
MINE & PLANT, Clarence Ctr, N Y
underground, Gypsum
L H Seufert, plant mgr
L D Liles, mine supt
MINE & PLANT, Bellefonte, Pa; underground, Limestone
H E Gustafson, plant mgr
J H Kelly, mine supt
MINE & PLANT, Kimballton, Va; underground, Limestone
Monroe Rule, plant mgr
T B Evans, mine supt
QUARRY & PLANT, Luckey, Ohio; Limestone
F C Mallery, plant mgr
J DeMarco, quarry supt
QUARRY & PLANT, York, Pa; Limestone
W W Wallace, plant mgr
C E Tesnow, quarry supt

NATIONAL LEAD CO
Titanium Div: 111 Broadway, New York 6, N Y
Pres: Joseph A Martino
Gen Mgr: Joseph H Reid
Asst mgr: Frank R Milliken
MacINTYRE DEVELOPMENT, Tahawus, 30 mi N of North Creek, N Y, open pit, Titanium, Fe
George W Wunder, pl mgr
Paul W Allen, asst pl mgr
Leon de Polac, purch agt
Charles R Begor, Jr, gen supt
Chas R Begor, Sr, mine supt
Carroll A Quam, asst mine supt
John R McBride, pl engr
P C McLean & A J LaCourse, mine foremen
J Zollinger, maint supt
John Holland, geol
4,200 GRAV FLOT MILL
John J Strohl, mill supt
Robert I Kingman, asst mill supt
Wm P Jenkins & E Geroux, mill foremen
Harold M Davies, assy
THREE PAN GREENAWALT SINTERING PLANT
J A Pohl, sinter pl supt
Prod: 4,200 tons daily

NEW JERSEY ZINC CO
160 Front St, New York, N Y
Pres: Henry Hardenbergh
Gen mgr of mines: S S Goodwin
Gen purch agt: W J Lee
MINES at Franklin & Ogdensburg, N J, Zn
MAGNETIC & GRAV MILLS
W F Evans, gen supt
BERTHA MINERAL DIVISION:
MINE at Austinville, Wythe co, Va, Zn, Pb
2,000-TON FLOT MILL
W L Albers, supt

OUSSLER, JOHN R
Marriotsville, Md
MINE, Henrytown, Md; soapstone

OZARK-MAHONING CO
Box 449, Tulsa 1, Okla
Pres: Park Kelley
VP & gen mgr: J G Trewartha
FLUORSPAR FILTER CAKE DRYING PLANT at Wilmington, Del
J L Cadden, purch agt
W V Kuster, pl supt
MAHONING MINING DIV, Rosiclare, Ill; underground, Zn, Pb
R K Wisco, gen supt
J L Cadden, dist purch agt
V G Smith, mine supt
William Melcher, mine engr
H D Davis, ch elec
A G Johnson, geol
K A Brecke, asst geol
FLOT MILL at Rosiclare, Ill
H E Baillie, E G Owitz, W V Kuster, mill supts
W C Ahern & R Herman, mill fore
R A Sperberg, met
Walter Millhouse, asst met
Robert Perkett, asst met
Prod: 600 tons crude per day
MAHONING-BABB MINE, Livingston co, Ky; Fluorspar

PECHNEK BROS
Box 233, South Paris 3, Maine
FRED STEARNS, TWITCHELL, MT MARIE, THOMAS & ROY WARDELL MINES, Oxford co, Maine

PENNSYLVANIA SALT MFG CO
1000 Widener Bldg, Philadelphia 7, Pa
KENTUCKY-BABB MINE, Salem, Ky; Fluorspar
John S Tibbs, res engr & geol
Under dev

PHELPS DODGE REFINING CORP
40 Wall St, New York 5, N Y (Subsidiary of Phelps Dodge Corp, Ariz)
(officers of this subsidiary listed under South Central)
LAUREL HILL REFINERY & SMELTER, Laurel Hill, N Y
Howard Barkell, works mgr
Produces elec copper, copper sulfate, nickel sulphate, selenium, tellurium

PHOENIX GYPSUM CO, INC
Oakfield, N Y
Secy: John D Chamberlain
NUMBER 1 MINE, Oakfield, N Y, gyp
MINE & MILL, Alabama, Genesee co, N Y, gypsum

REPUBLIC STEEL CORP
Republic Bldg, Cleveland 1, Ohio
(For company officers, see North Central listing)
OLD BUD, HARMONY & FISHER HILL MINES at Mineville, N Y, underground,
R J Linney, mgr
J R Brennan, mine supt
H S Berube, mine fore
W A Blomstraw, engr
M L Dezendorf, elec engr
L C Henry, mech engr
MILL
T F Catanzarita, mill supt
J Jacka, assy
C A Carlson, assy
Prod: 200,000 tons yearly; 1,300,000 tons conc yearly from mag sep
CHATEAUGAY MINE, Lyon Mountain, N Y, underground & open pit, Fe
Joseph Tolosky, mine supt
P J McMenamin, engr
Howard Pigg, mech & elec engr
Peter Daniels, elec
MILL
E Furness, mill supt
J M Scott, assy
Prod: 1,250,000 tons yearly; 385,000 tons conc yearly from mag conc

RICHARD ORE CO
Wharton, New Jersey
Pres: P Ward Coburn
VP: Fordyce Coburn
Gen mgr: Martin J Brophy
Cons engr: M T Hoster
Purch agt: John P Ryan
RICHARD MINE near Wharton, underground, Fe
Richard Dockeray, mine supt
William P Galligan, safety engr
Albert J Getz, engr
Joseph J Butchko, mech engr
George Gawthron, elec engr
Harry Martin, elec
600-TON MAGNETIC MILL
Paul W Keim, mill supt

ROSICLARE LEAD & FLUORSPAR MINING CO
Rosiclare, Ill
Pres: J M Blayney
ROSICLARE MINES, underground, Fluorspar
A H Cronk, gen supt
E V Young, mine supt
Rodney McClusky, mine engr
Harold Johnston, mech engr & safety engr
Percy Howard, elec engr
HMS-FLOT-GRAV-MILL
Walter Hamilton, met
James Crotser, assy

RUBERIOD CO, THE
Vermont Asbestos Mines Div; Hyde Park, Vt
LOWELL QUARRY, Orleans co, Vt
MILL, Eden, Vt; Asbestos

ST JOSEPH LEAD CO
250 Park Ave, New York 17, N Y
Ch of board: C H Crane
Pres: Andrew Fletcher
VPs: C M Chapin, Jr, Francis Cameron & F E Wormser
VP & treas: G I Brigden
Secy: Robert Bennett
Asst secy-treas: Charles Fleig
Asst secy-treas: James G Colvin
ZINC MINES & MILLS, Edwards & Balmat, N Y
1,650 TON MILL EQUIPMENT
Prod: 500,000 tons ore annually
ZINC SMELTER, Josephtown, Pa
Prod: 72,000 tons Zn; large tonnage zinc oxide annually

TIMBERVILLE MINING CO
Box 517, Winchester, Va
Operator: Ben Braunlich
TIMBERVILLE MINE

TONCRAE MINING CO, INC
2811 Greenlawn Ave, Wmsn Rd, Roanoke, Va
Pres & gen mgr: Charles H Thompson
VP: W J Durkin, New York
Secy: Leo Howard
Purch agt: C H Thompson
TONCRAE NUMBER 1 MINE, Rt 6, Floyd, Va, Cu, Fe
H Clay Harmon, mine supt
Robert Conner, asst mine supt
Oscola Pratt, mine fore
ROASTING, LEACHING & PRECIPITATION PLANTS
Prod: 60 tons

TRI-STATE ZINC CO
70 Pine St, New York, N Y
GRAY, BAUTSCH, HKER MINES, Box 1011, Galena, Ill, Pb, Zn
Pres: C O Lindberg
Secy-treas: J H Nicholls
Dir & gen mgr: M H Loveman
Asst mgr: V C Allen
Dir: R P Playter
900-TON GRAV-FLOT MILL
Prod: 750-tons daily

TRUSIANI, CESARE
Brunswock, Maine
DESMOND MATCH, Topsham, Maine, Feldspar, Mica & Quartz

U S STEEL COMPANY
[illegible] Seventh Ave, Pittsburgh 30, Pa
[illegible]: Benjamin F Fairless
Exec VP, operations: Clifford Hood
Exec VP, commercial: David F Austin
Exec VP, law & secretarial: Roger M Blough
Exec VP, engineering: Malcolm W Reed
Exec VP, accounting: George W Rooney
[illegible] NUMBER 1 MINE, Mexico, Ky; Pb, Zn, [illegible], CaF2
[illegible] G Strote, purch agt
[illegible] A Johnston, mine supt
[illegible] H Drenan, asst mine supt
[illegible] T Folwell, engr
Dixie Martin, mine fore
[illegible] G Martin, mine fore
Clarence Agee, elec
500-TON GRAV-FLOT MILL
Press M Buckalew, mill fore
J W Hina, met

UNITED STATES GYPSUM CO
300 W Adams St, Chicago 6, Ill
(For officers see Calif listing)
MINE at Gypsum, Ohio, underground, gypsum
MINE at Falls Village, Conn, open-pit, limestone
MINE at Farnams, Mass, open-pit, limestone
MINE at Oakfield, N Y, underground, gypsum
MINE at Plasterco, Va, underground, gypsum

U S LEAD REFINERY, INC
c/o U S Smelting Refining & Mining Co
75 Federal St, Boston, Mass
EAST CHICAGO, Ind Pl, East Chicago, Ind; Pb

U S METALS REFINING CO
61 Broadway, New York, N Y
SMELTING PL, Carteret, N J; Cu

UNIVERSAL ATLAS CEMENT CO
135 E 42nd St, New York, N Y
Compt: H C Schaielan
Operations at Clarence Center, N Y
gypsum

VERMONT ASBESTOS MINES
Division of the Rubberoid Co
Hyde Park, Vt
MILL, Eden, Vt; Asbestos
LOWELL QUARRY, Orleans co, Vt; Asbestos

VERMONT COPPER CO, INC
S Strafford, Vt
Ch of bd: Geo A Ellis
Pres: Frank Eichelberger
Treas: Clarence B Benson
Purch agt: Harold Davis

ELIZABETH ELY & PIKE HILL MINES
S Strafford, Vt; underground, Cu, Ag
J C Wangaard, mine supt
C F Banker, asst mine supt
R D Atkins, engr
J T MacKay, elec
750-800 TON FLOT MILL
H A Johnson, mill supt
J W Joyce, met
Prod: 250,000 tons annually

VERMONT MINERAL PRODUCTS, INC
Chester, Vt
READING QUARRY, Reading, Vt

VERMONT TALC CO
Chester, Vt
Pres: T A Yager
Gen supt: Joseph Winot
MINE, Windham, Vt; open-pit, talc
MILL, Chester, Vt

VICTORY FLUORSPAR MINING CO
Elizabethtown, Ill
VICTORY MINE, Cave-in-Rock, Ill
F

WARREN FOUNDRY & PIPE CORP
Box 392, Dover, N J
Ch of bd: M G B Whelpley
Pres: L H Dohm, 55 Liberty St, New York, New York
VP: T R Walker, Jr
Gen supt: Frank G Woodruff
Purch agt: Henry Chidsey, Phillipsburg, New Jersey
MOUNT HOPE MINE, Morris co, N J, Fe
Clinton L Miller, mine supt
John Sheplak, Koeler Stout, mine fore
Thomas J Holland, engr
Charles Struble, Jr, elec engr
Randolph Brogan, safety engr
Allan James, ch geol
750-TON MAGNETIC MILL
Henry J Schwellenbach, mill supt
Prod: 180,000 tons yearly

WEIRTON STEEL CO
Weirton, W Va
WEIRTON MINE, Morgantown, Fe

WHITEHALL CO, INC
17 Battery Pl, New York 4, N Y
Pres: Eversley Childs
VP: A E Davison
VP, gen supt & purch agt: P B Verplanck
NUGGLES MINE, Grafton, N H; open pit, Feldspar, Mica, Beryl, Spodumene

YINGLING OIL & MINING CO
618 Citizens Bank Bldg, Evansville 17 Ind
ROSE CREEK MINE, Herod, Ill; Fluorspar

POSSIBLE MARKETS—
ORES—METALS—NON-METALLICS

—AS COMPILED BY THE ECONOMICS DIVISION, U. S. BUREAU OF MINES

ANTIMONY

American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.
Bers & Company, Ashland and Lewis Streets, Philadelphia 24, Pa.
Borcherding, Wm., 441 Pearl St., New York, N. Y.
Bowers Battery & Spark Plug Co., Reading, Pa.
Bradley Mining Co., 425 Crocker Bldg., San Francisco 4, Calif.
Bunker Hill Smelter, Kellogg, Idaho.
The Eagle-Picher Co., P. O. Box 278, Galena, Kans.
The Eagle-Picher Co. of Texas, P. O. Box 5354, Dallas, Texas.
Foote Mineral Co., 10 East Chelton Ave., Philadelphia 44, Pa.
Chas. Gitlan & Co., 25 Beaver St., New York 4, N. Y.
The Glidden Co., 1396 Union Commerce Bldg., Cleveland 14, Ohio.
Goldsmith Bros. Smelting & Refining Co., 1300 W. 59th St., Chicago 36, Illinois.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland, Ohio.
Hudson Smelting & Refining Co., 85 Hyatt Ave., Newark 5, N. J.
Kansas City Smelting & Manufacturing Co., 2223 Guinatte Ave., Kansas City, Kansas.
Morris P. Kirk & Son, Inc., 2717 So. Indiana St., Los Angeles 23, Calif.
Master Metals, Inc., 2850 W. 3rd St., Cleveland 13, Ohio.
McGean Chemical Co., 1106 Republic Bldg., Cleveland 15, Ohio.
Metal & Thermit Corp., 120 Broadway, New York 5, N. Y.
Metro Smelting Co., Ontario & Bath Sts., Philadelphia 34, Pa.
National Lead Co., 111 Broadway, New York 6, N. Y.
Pennsylvania Smelting & Rfg. Co., 3100 E. Ontario St., Philadelphia 34, Pa.
Philipp Bros., Inc., 70 Pine St., New York 5, N. Y.
Pope Trading Corp., 75 West St., New York 6, N. Y.
Rare Metal Products Co., 522 Cortlandt St., Belleville 9, N. J.
Rochester Smelting & Rfg. Co., Inc., 26 Sherer St., Rochester 2, N. Y.
C. Tennant, Sons & Co., Empire State Bldg., 100 Park Ave., New York 17, N. Y.
Wah Chang Corp., 233 Broadway, New York 7, N. Y.

ASBESTOS

Alsop Engineering Corp., 1947 Norton St., Milldale, Conn.
American Brake Shoe Co., American Brakeblok Division, 4600 Merritt Ave., Detroit 9, Mich.
American Felt Co., Glenville, Conn.
American Hair & Felt Co., 1828 Merchandise Mart, Chicago 54, Ill.
Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.
Asbestos Corp. of America, 90 West St., New York, N. Y.
Asbestos Mfg. Co., East Sabine St., Huntington, Ind.
Asbestos Textile Co., Inc., 226 N. LaSalle St., Chicago 1, Ill.
Asten-Hill Mfg. Co., Scott's Lane, Philadelphia 29, Pa.
Atlantic Asbestos Corp., 2128 West Chester Ave., Bronx 61, N. Y.
Atlas Asbestos Co., 500 Mitchell St., North Wales, Pa.
Barco Mfg. Co., 1801 W. Winnemac Ave., Chicago 40, Ill.
Bendix Aviation Corp., Marshall Eclipse Division, P. O. Box 538, Troy, N. Y.
Bird & Son, Inc., 47 Wilson St., East Walpole, Mass.
Carolina Asbestos Co., Davidson, N. C.
The Celotex Corp., 120 S. La Salle St., Chicago 3, Ill.
Chemetals Corp., S. Dow St. & Erie R.R., Falconer, N. Y.
Colt's Mfg. Co., 17 Van Dyke Ave., Hartford, Conn.
Commercial Solvents Corp., Agnew, Calif.
Crane Packing Co., 1810 Cuyler Ave., Chicago 13, Ill.
Detroit Gasket & Mfg. Co., 12640 Burt Rd., Detroit 23, Mich.
R. J. Dorn Co., Inc., 5300 Tchoupitoulas St., New Orleans 15, La.
Eagle-Picher Co., American Bldg., Cincinnati 1, Ohio.
Fibre & Metal Products Inc., 206 S. Downey Ave., Downey, Calif.
Flintkote Co., 4111 R.C.A. Bldg., New York, N. Y.
The Garlock Packing Co., 250 Main St., Palmyra, N. Y.
Gasket Materials Corp., 1947 Johnson St., Middletown, Conn.
General Motors Corp., Inland Mfg. Divison, 2727 Inland Ave., Dayton, Ohio.
The B. F. Goodrich Co., 440 S. Main St., Akron 18, Ohio.
Goodyear Tire & Rubber Co., 1144 East Market St., Akron 16, Ohio.
Greene, Tweed & Co., 340 Elm St., North Wales, Pa.
International Vermiculite Co., Girard, Ill.
Johns-Manville Corp., 22 East 40th St., New York 16, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
Lasco Brake Products Corp., 2619 Magnolia St., Oakland 7, Calif.
L. J. Miley Co. of Indiana, 705 W. Main, North Manchester, Ind.
Milwaukee Insulation Co., 4410 W. Lisbon Ave., Milwaukee 8, Wisc.
Norristown Magnesia & Asbestos Co., 10 Bergstrasser Ave., Norristown, Pa.
Owens-Illinois Glass Co., 945 Wall St., Toledo, Ohio.
Palmer Asbestos & Rubber Corp., 150 N. Michigan Ave., Chicago 14, Ill.
Pecora Paint Co., Inc., 3501 N. 4th St., Philadelphia 40, Pa.
Philadelphia Asbestos Co., 2010 N. 10th St., Philadelphia 40, Pa.
Philip Carey Mfg. Co., 1935 Easton Bldg., Lockland, Cincinnati 15, Ohio.
Powhatan Mining Co., Woodlawn, Baltimore, Md.
Raybestos-Manhattan, Inc., Raybestos Div., 940 Rayman St., Bridgeport 2, Conn.
Refractory & Insulation Corp., Port Kennedy, Pa.
Republic Filters Inc., 204 21st Ave., Paterson, N. J.
Rostone Corp., 136 S. Earle Ave., Lafayette, Ind.
Ruberoid Co., 500 Fifth Ave., New York 18, N. Y.
Russell Mfg. Co., East Main St., Middletown, Conn.
F. E. Schundler & Co., Inc., 584 Railroad St., Joliet, Ill.
Smith & Kanzler Corp., Linden, N. J.
Standard Asbestos Mfg. Co., 860 Evergreen Ave., Chicago, Ill.
Standard Oil Co. of Pa., 34th and Smallman Sts., Pittsburgh 1, Pa.
Standco Brake Lining Co., P. O. Box 93, 2701 Clinton Ave., Houston 1, Tex.
Thermoid Co., 400 Whitehead Rd., Trenton 6, N. J.
Thermoid Co., Southern Div., 1000 Seaboard St., Charlotte 1, N. C.
Tilo Roofing Co., Inc., 347 Longbrook Ave., Stratford, Conn.
Union Asbestos & Rubber Co., 332 S. Michigan Ave., Chicago, Ill.
Union Asbestos & Rubber Co., Paterson, N. J
U. S. Gypsum Co., 300 West Adams St., Chicago 6, Ill.
U. S. Rubber Co., Textile Dept., 1230 Sixth Ave., New York 20, N. Y.
Victor Mfg. & Gasket Co., 5752 Roosevelt Rd., Chicago, Ill.
World Bestos Corp., New Castle, Ind.

BARITE GRINDERS

(Possible Buyers of Crude Barite)

Acme Barite Co., 2001 Lynch Ave., East St. Louis, Ill. (Makes crushed barite only.)
Arizona Barite Co., Box 926, Mesa, Ariz.
Barium Products, Ltd., Newark, Calif.
Baroid Sales Division, National Lead Co., 830 Ducommun St., Los Angeles 12, Calif.
Barytes Mining Co., Potosi, Mo. (Makes crushed barite only.)
Clinchfield Sand & Feldspar Corp., 618 Mercantile Trust Bldg., Baltimore 2, Md.
J. R. Dellinger, Cartersville, Ga.
De Lore Division, National Lead Co., P. O. Box 2808, Carondelet Station, St. Louis 11, Mo.
The Glidden Co., Chemical & Pigment Division, 766 50th Ave., Oakland 1, Calif.
Industrial Minerals & Chemical Co., Sixth and Gilman Sts., Berkeley, Calif.
Magnet Cove Barium Corp., P. O. Box 6504, Houston 5, Texas.
New Riverside Ochre Co., Cartersville, Ga.
F. E. Schundler & Co., Inc., 504 Railroad St., Joliet, Ill.
Southwark Manufacturing Co., Camden, N. J.
Thompson-Weinman & Co., Cartersville, Ga.
L.A. Wood, Box 72, Sweetwater, Tenn. (Makes crushed barite only.)

(Possible Buyers of Crushed or Ground Barite for Use in Glass)

Anchor-Hocking Glass Co., 109 N. Broad St., Lancaster, Ohio.
Armstrong Cork Co., Lancaster, Pa.
Ball Bros., Ryan and Burt Sts., Muncie, Ind.
Brockway Glass Co., Brockway, Pa.
Buck Glass Co., Fort and Silica Sts., Baltimore, Md.
Carr-Lowrey Glass Co., Baltimore, Md.
Commercial Glass Co., Fairmont, W. Va.
Demuth Glass Co., Parkersburg, W. Va.
Diamond Glass Co., Royersford, Pa.
Fairmont Glass Works, Keystone Ave. and Belt Ry., Indianapolis, Ind.
Foster-Forbes Glass Co., Marion, Ind.
Glenshaw Glass Co., Glenshaw, Pa.
Hazel-Atlas Glass Co., 1942 Danneburg St., Wheeling, W. Va.
Imperial Glass Co., Bellaire, Ohio.
Jeannette Glass Co., Jeannette, Pa.
A. H. Kerr & Co., Sand Springs, Okla.
Kimble Glass Co., Vineland, N. J.
Latchford-Marble Glass Co., P. O. Box 4707, Los Angeles, Calif.
McKee Glass Co., Jeannette, Pa.
Owens-Illinois Glass Co., Duraglas Bldg., Toledo, Ohio.
Owens-Illinois-Pacific Coast Co., 135 Stockton St., San Francisco, Calif.
Phoenix Glass Co., Monaca, Pa.
Sterling Glass Co., Lapel, Ind.
Thatcher Manufacturing Co., Elmira, N. Y.
Vitro-Agate Co., Parkersburg, W. Va.

(Possible Buyers of Ground Barite for Use in Paint)

Alsamite Paint & Varnish Co., 3310 E. Thompson St., Philadelphia, Pa.
Amalgamated Paint Co., Inc., Pier 11, North River, New York, N. Y.
American Home Paint, Inc., 405 Watkins St., Brooklyn, N. Y.
Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.
Atlantic Paint & Varnish Works, Wilmington, N. C.
Baker Paint & Varnish Co., 224 Suydam Ave., Jersey City, N. J.
E. S. Browning Co., 1515 Third St., San Francisco, Calif.
M. A. Bruder & Sons, 52nd and Grays Aves., Philadelphia 43, Pa.
C. E. Butler Co., 2868 Hanna St., Oakland 8, Calif.
Calbar Paint & Varnish Co., 2620 North Martha St., Philadelphia 25, Pa.
Central Paint & Varnish Works, 69 Prospect St., Brooklyn 1, N. Y.
Chilton Paint Co., 10 15th Ave., College Point, N. Y.
Clement Coverall Co., 615 Van Hook St., Camden, N. J.
H. B. Davies Co., 700 N. 27Sth St., Camden, N. J.
Durable Paint Co., 373 Hamilton Ave., Brooklyn, N. Y.
Fisher Thorsen & Co., Inc., 2100 N. W. 22nd Ave., Portland 10, Ore.
Ford Motor Co., Dearborn, Mich.
W. P. Fuller & Co., Portland, Ore.
W. P. Fuller & Co., 301 Mission St., San Francisco, Calif.
General Paint Corp., 2627 Army St., San Francisco 19, Calif.
M. Grumbacker, 460 W. 34th St., New York 1, N. Y.
Hock Paint & Chemical Works, Phoenixville, Pa.
R. M. Hollingshead Corp., 8840 Cooper St., Camden, N. J.
C. H. Howell & Co., 212 Race St., Philadelphia, Pa.
Jaegle Paint & Varnish Co., 1607 South 20th St., Philadelphia, Pa.
Landets-Segal Color Co., 78 Delevan St., Brooklyn, N. Y.
Leland Moore Paint & Oil Co., Charleston, S. C.
Longview Paint & Varnish Co., Longview, Wash.
R. N. Nason & Co., 151 Potrero Ave., San Francisco, Calif.
Payson Paint & Varnish Co., 804 E. 141st St., New York, N. Y.

Gilbert Spruance Co., Richmond and Tioga Sts., Philadelphia 34, Pa.
Stay & Day Paint Materials, 2530 E. 14th St., Los Angeles, Calif.
Tri City Paint Co., 1220 Fourth St., Berkeley 2, Calif.
Paul Uhlich & Co., 90 West St., New York, N. Y.
United Color & Pigment Co., Inc., Newark, N. J.
U. S. Gypsum Co., 300 W. Adams St., Chicago, Ill.
U. S. Kalsomine Co., 50 Church St., New York, N. Y.
Utility Color Co., 377 Frelinghuysen Ave., Newark, N. J.
Wesco Waterpaints, Fifth and Grayson Sts., Berkeley 2, Calif.

(Possible Buyers of Ground Barite for Use in Rubber)

Armstrong Cork Co., Lancaster, Pa.
Atlantic Tubing & Rubber Co., 1756 Cranston St., Providence, R. I.
Bowling Green Rubber Co., Hoag and Prospect Sts., Toledo 6, Ohio.
Buckeye Reliner Producing Co., Lima, Ohio.
Castle Rubber Co., East Butler, Pa.
Firestone Tire & Rubber Co., Akron, Ohio.
General Asbestos & Rubber Co., North Charleston, S. C.
Hamilton Rubber Manufacturing Co., Mead and South Sts., Trenton, N. J.
R. M. Hollingshead Corp., Camden, N. J.
Ideal Rubber Co., 273 van Sinderin Ave., Brooklyn, N. Y.
Johns-Manville Co., Manville, N. J.
Laurie Rubber Reclaiming Co., New Brunswick, N. J.
Linear Packing & Rubber Co., 6464 State Rd., Philadelphia, Pa.
Manhattan Rubber Division of Raybestos-Manhattan, Inc., Passaic, N. J.
Martin Rubber Co., Long Branch, N. J.
Okonite Co., Passaic, N. J.
Quaker Rubber Co., 4915 Comly St., Philadelphia 24, Pa.
Seiberling Rubber Co., Akron, Ohio.
U. S. Asbestos Division, Raybestos-Manhattan, Inc., Manheim, Pa.
U. S. Rubber Co., 1232 Sixth Ave., New York 20, N. Y.
Whitehead Bros. Rubber Co., 492 Whitehead Rd., Trenton, N. J.

(Possible Buyers of Crude Barite for Use in Lithopone)

The Chemical & Pigment Co., Inc., P. O. Box 191, Collinsville, Ill.
Eagle-Picher Co., American Bldg., Cincinnati, Ohio.
E. I. du Pont de Nemours & Co., Du Pont Bldg., Wilmington 98, Del.
The Glidden Co., Chemical & Pigment Div., 766 50th Ave., Oakland 1, Calif.
The Glidden Co., Chemical & Pigment Div., St. Helena, Baltimore 22, Md.
The New Jersey Zinc Co., Mineral Point Zinc Div., 160 Front St., New York 7, N. Y.
New Jersey Zinc Co. of Pa., 160 Front St., New York 7, N. Y.
Ozark Smelting & Mining Co., 101 Prospect Ave., N.W., Cleveland 1, Ohio.

(Possible Buyers of Crude Barite for Use in Barium Chemicals)

Barium Products Ltd., Newark, Calif.
Barium Reduction Corp., Drawer 1, South Charleston, W. Va.
Chemical Products, Cartersville, Ga.
Chicago Copper & Chemical Co., Blue Island, Ill.
E. I. du Pont de Nemours & Co., Du Pont Bldg., Wilmington 98, Del.
Mallinckrodt Chemical Works, St. Louis, Mo.
National Lead Co., Titanium Div., 111 Broadway, New York, N. Y.
Standard Ultramarine Co., Huntington 18, West Va.

BENTONITE

American Colloid Co., Merchandise Mart Plaza, Chicago 54, Ill.
Barnsdall Refineries Inc., 61 E. Van Buren St., Chicago, Ill.
Bradford Oil Refining Co., Bradford, Pa.
Cities Service Refining Co., Boston, Mass.
Commercial Minerals Co., San Francisco, Calif.
Federal Foundry Supply Co., 4620 East 71st St., Cleveland, Ohio.
Gulf Refining Co., 260 S. Broad St., Philadelphia, Pa.
Harshaw Chemical Co., 47 Ann St., New York 7, N. Y.
Humble Oil and Refining Co., P. O. Box 2180, Houston, Texas.
Industrial Minerals and Chemical Co., Berkeley, Calif.
Lever Bros. Co., Cambridge, Mass.
Magnolia Petroleum Co., Beaumont, Texas.
Pure Oil Co., 35 E. Wacker Dr., Chicago, Ill.
Quaker State Oil Corp., Emlenton, Pa.
Richfield Oil Corp. of New York, Chanin Bldg., New York, N. Y.
F. E. Schundler & Co., Inc., 504 Railroad St., Joliet, Ill.
Socony-Vacuum Oil Co., 26 Broadway, New York, N. Y.
Standard Oil Co. of California, 225 Bush St., San Francisco, Calif.

BERYLLIUM

Beryl Ores Co., Box 409, Route 1, Arvada, Colo.
Beryllium Corp., Reading, Pa.
Brush Beryllium Co., 4301 Perkins Ave., Cleveland 3, Ohio.
Clifton Products, Inc., Painesville, Ohio.
Foote Mineral Co., 18 W. Chelten Ave., Philadelphia 44, Pa.
Philipp Bros., Inc., 70 Pine St., New York 5, N. Y.
C. Tennant, Sons & Co., Empire State Bldg., New York 1, N. Y.

BISMUTH (Metallic)

J. T. Baker Chemical Co,. Phillipsburg, N. J.
Belmont Smelting & Refining Works, Inc., 330 Belmont Ave., Brooklyn, N. Y.
Cerro de Pasco Copper Corp., 40 Wall St., New York 5, N. Y.
Merck & Co., Inc., Rahway, N. J.
Mallinckrodt Chemical Works, St. Louis, Mo.
Neo Smelting & Refining Co., 29 Broadway, New York 6, N. Y.
Philipp Bros., Inc., 70 Pine St., New York, N. Y.
Varlacoid Chemical Co., 116 Broad St., New York, N. Y.

CADMIUM

American Metal Co., Ltd., Duquesne Division, Pittsburgh, Pa.
Anaconda Copper Mining Company, 25 Broadway, New York 4, N. Y.
Arkansas Metals Company, P. O. Box 345, Jonesboro, Ark.
Belmont Smelting & Rfg. Works, Inc., Brooklyn, N. Y.
Duquesne Smelting Corp., Pittsburgh, Pa.
Federated Metals Div., American Smelting & Rfg. Co., New York, N. Y.
Charles Hardy, Inc., New York, N. Y.
Harshaw Chemical Company, 1945 East 97th St., Cleveland 6, Ohio.
International Selling Corp., New York, N. Y.
Mercantile Metal & Ore Corp., New York, N. Y.
Metal Reclaiming Co., New York, N. Y.
Metal Traders, Inc., New York, N. Y.
Mid-American Non Ferrous Metal Co., Chicago, Ill.
North American Smelting Co., Inc., Philadelphia, Pa.
Philipp Brothers, Inc., 70 Pine St., New York N. Y.
C. Tennant, Sons & Company, of New York, Empire State Bldg., New York 1, N. Y.
United States Smelting & Refining Company, 75 Federal St., Boston, Mass.
Hyman Viener & Sons, Richmond, Va.
Western Metal Co., Chicago, Ill.

CHROME ORE

(Metallurgical Ore Users)

Electro-Metallurgical Sales Corp., 30 E. 42nd St., New York 17, N. Y.
Ohio Ferro-Alloys Corp., Canton 2, Ohio.
Pittsburgh Metallurgical Co., Niagara Falls, N. Y.
Rustless Iron & Steel Division of the Armco Steel Corp., 3400 E. Chase St., Baltimore 13, Md.

(Chemical Ore Users)

Vanadium Corporation of America, 420 Lexington Ave., New York 17, N. Y.
Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland 14, Ohio.
Imperial Paper & Color Corp., Glens Falls, N. Y.
The Martin Dennis Co., 859 Summer Ave., Newark 4, N. J.
Mutual Chemical Co. of America, 270 Madison Ave., New York 16, N. Y.
Natural Products Refining Co., Jersey City 5, N. J.

(Refractory Ore Users)

Allegheny-Ludlum Steel Corp., Brackenridge, Pa.
Basic Refractories, Inc., 845 Hanna Bldg., Cleveland 15, Ohio.
Bradley & Ekstrom, 320 Market St., San Francisco, Calif.
Botfield Refractories Co., 777 S. Swanson St., Philadelphia 47, Pa.
Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
Foote Mineral Co., Inc., 18 W. Chelten Ave., Philadelphia 44, Pa.
General Refractories Co., Broad and Chestnut Sts., Philadelphia 7, Pa.
Harbison-Walker Refractories Co., Farmers Bank Bldg., Pittsburgh 22, Pa.
E. J. Lavino & Co., 1528 Walnut St., Philadelphia 2, Pa.

COBALT

Ceramic Color & Chemical Mfg. Co., New Brighton, Pa.
Foote Mineral Co., 18 W. Chelten Ave., Philadelphia 44, Pa.
Harshaw Chemical Co., 1945 East 97th St., Cleveland, Ohio.
The Pyrites Co., Wilmington, Del.
J. A. Samuel & Co., 220 Broadway, New York, N. Y.
Shepherd Chemical Co., Highland Avenue, Cincinnati, Ohio.

COPPER

American Metal Co., Ltd., Carteret, N. J.
American Smelting & Refining Co., El Paso, Tex.
American Smelting & Refining Co., Garfield, Utah.
American Smelting & Refining Co., Hayden, Ariz.
American Smelting & Refining Co., Perth Amboy, N. J.
American Smelting & Refining Co., Tacoma, Wash.
Anaconda Copper Mining Co., Anaconda, Mont.
Inspiration Consolidated Copper Co., Inspiration, Ariz.
International Smelting & Refining Co., Miami, Ariz.
International Smelting & Refining Co., Tooele, Utah.
International Smelting & Refining Co., Perth Amboy, N. J.
Kennecott Copper Corp., (Nevada Plant), McGill, Nev.
Kennecott Copper Corp. (New Mexico Plant), Hurley, N. M.
Magma Copper Co., Superior, Ariz.
Phelps Dodge Refining Corp., Laurel Hill, N. Y.
Phelps Dodge Corp., Copper Queen Branch, Douglas, Ariz.
Phelps Dodge Corp., Morenci Branch, Morenci, Ariz.
Phelps Dodge Corp., New Cornelia Branch, Ajo, Ariz.
C. Tennant, Sons & Co., Empire State Bldg., New York 1, N. Y.
Tennessee Copper Co., Copperhill, Tenn.

DIATOMITE

American Cyanamid Co., 30 Rockefeller Plaza, New York, N. Y.
A. Daigger & Co., 161 West Kinzie St., Chicago, Ill.
General Refractories Co., 1518 Locust St., Philadelphia, Pa.
B. F. Goodrich Co., 440 S. Main St., Akron, Ohio.
Hygeia Filter Co., 3422 Denton St., Detroit.
Industrial Minerals & Chemical Co., 836-38 Gilman St., Berkeley, Calif.
Marshall Dill Division, Witco Chemical Co., 30 Bluxome St., San Francisco, Calif.
Miller Products Co., 1932 S W Water Ave., Portland, Ore.
Minerals & Insulation Co., Inc., 240 Webster St., Trenton 4, N. J.
National Battery Co., First Nat'l Bank Bldg., St. Paul, Minn.
National Filter Media Co., Sales Div. of Filter Media Corp., 1719 Dixwell Ave., New Haven, Conn.

FLUORSPAR

(Brokers or Selling Agents)

Balfour, Guthrie & Co., Los Angeles, Calif.
Bauer-Wilson & Bateman, 138 S. LaSalle St., Chicago, Ill.
Continental Ore Co., 500 Fifth Ave., New York City.
E. I. du Pont de Nemours & Co., 1007 Market St., Wilmington, Del.
Foote Mineral Co., 18 W. Chelten Ave., Philadelphia 44, Pa.
Hickman, Williams & Co., Clark Bldg., Pittsburgh, Pa.
Kerchner, Marshall & Co., Oliver Bldg., Pittsburgh, Pa.
E. J. Lavino & Co., 1528 Walnut St., Philadelphia, Pa.
Mercantile Import & Export Corp., 21 East 40th St., New York City.
Mercantile Metal & Ore Corp., 60 Wall St., New York City.
Miller-Adick Co., Carew Tower, Cincinnati, O.
Wm. H. Muller & Co., Inc., 122 East 42nd St., New York City.
Oglebay Norton & Co., Hanna Bldg., Cleveland, O.
Frank Samuel & Co., Lincoln-Liberty Bldg., Philadelphia, Pa.
Sussex Trading Corp., 1 Newark Ave., Jersey City, N. J.
Tomlinson & Co., 1500 Wanut St., Philadelphia, Pa.

Note: Purchases direct from producers are made in a great many instances by the following types of industries: **Acid Spar**—aluminum reduction works, certain chemical manufacturers. **Ceramic grade**—pottery, glass and dishware plants. **Metallurgical grade**—ferroalloy producers, steel mills, foundries, cement plants, etc.

IRON ORE

Armco Steel Corp., Middleton, Ohio.
Bethlehem Steel Company, Bethlehem, Pa.

Colorado Fuel & Iron Corp., Pueblo, Colorado.
Crucible Steel Co. of America, 405 Lexington Ave., New York, N. Y.
Ford Motor Company, Detroit, Mich.
Hanna Furnace Corp., Grant Bldg., Chicago 3, Ill.
Inland Steel Co., 38 S. Dearborn St., Chicago 3, Ill.
International Harvester Co., 180 No. Michigan Ave., Chicago 1, Ill.
Jones & Laughlin Steel Corp., 3rd Ave. and Ross St., Pittsburgh 30, Pa.
Kaiser Company, Inc., Fontana, Calif.
National Steel Corp., 2800 Grant Bldg., Pittsburgh, Pa.
Pittsburgh Steel Co., P. O. Box 118, Pittsburgh 30, Pa.
Republic Steel Corp., Republic Bldg., 25 Prospect Ave., N. W., Cleveland 1, Ohio.
Sloss-Sheffield Steel & Iron Co., Birmingham, Ala.
Wheeling Steel Corp., Wheeling, West Virginia.
Woodward Iron Company, Woodward, Ala.
Youngstown Sheet & Tube Co., Stambaugh Bldg., Youngstown 1, Ohio.

LEAD

American Metal Company, Ltd., 61 Broadway, New York 6, N. Y.
American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.
Bunker Hill & Sullivan Mining & Concentrating Co., Kellogg, Idaho.
The Consolidated Mining & Smelting Co., Ltd., Montreal, Canada.
The Eagle-Picher Co., Cincinnati 1, Ohio (American Building).
International Smelting & Refining Co., 25 Broadway, New York 4, N. Y.
Metal Traders, Inc., 67 Wall St., New York, N. Y.
National Lead Company, 111 Broadway, New York, N. Y.
Philipp Brothers, Inc., 70 Pine St., New York 5, N. Y.
St. Joseph Lead Co., 250 Park Ave., New York 17, N. Y.
C. Tennant, Sons & Co., Empire State Bldg., New York 1, N. Y.
United States Smelting, Refining & Mining Co., 75 Federal St., Boston, Mass.

LEPIDOLITE

Corning Glass Works, Corning, N. Y.
General Electric Co., Nela Park, Cleveland, Ohio.
Foote Mineral Co., 18 W. Chelton St., Philadelphia 44, Pa.
Pittsburgh Corning Corp., Port Allegany, Pa.

LITHIUM

Foote Mineral Co., Chelten Ave., Philadelphia 44, Pennsylvania.
General Electric Co., 1 River Road, Bldg. No. 59, Schenectady, New York.
Harshaw Chemical Co., 18 W. 97th St., Cleveland, Ohio.
Maywood Chemical Works, Maywood, New Jersey.
Metalloy Corp., 1320 Rand Tower, Minneapolis, Minnesota.
Westinghouse Electric & Mfg. Co., Lamp Division, Fairmont, West Virginia.

MAGNESITE

(Possible buyers of dead-burned magnesia)

Following is an incomplete list of firms operating basic open-hearth steel furnaces that ure dead-burned magnesia. Not all of the branch plants of the larger firms are listed, and many firms that operate only a few hearths are not listed at all.

Alan Wood Steel Co., Conshohocken, Pa. (Hearths at Ivy Rock, Pa.)
Allegheny Ludlum Steel Co., Pittsburgh, Pa. (Hearths at Brackenridge, Pa.)
American Rolling Mill Co., Middleton, Ohio (Hearths at Ashland, Ky., and St. Louis, Mo.).
Andrews Steel Co., Newport, Ky.
Bethlehem Steel Co., Bethlehem, Pa. (Hearths at Sparrows Point, Md.; Lackawanna, N. Y.; Bethlehem, Pa.; Johnstown, Pa.; Steelton, Pa.; and Seattle, Wash.).
Carnegie-Illinois Steel Corporation, Pittsburgh, Pa. (Hearths at Clairton, Pa.; Munhall, Pa.; Braddock, Pa.; and Duquesne, Pa.)
Colorado Fuel & Iron Corporation, Pueblo, Colo.
Columbia Steel Co., San Francisco, Calif. (Hearths at Pittsburg, Calif.)
Granite City Steel Co., Granite City, Ill.
Inland Steel Co., Indiana Harbor, Ind.
Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Kaiser Co., Inc., Fontana, Calif.
Lukens Steel Co., Coatesville, Pa.
National Steel Co., Pittsburgh, Pa. (Hearths at Weirton, W. Va.)
National Tube Corporation, Pittsburgh, Pa. (Hearths at Lorain, Ohio.)
Pittsburgh Steel Co., Pittsburgh, Pa. (Hearths at Monessen, Pa.)
Republic Steel Corporation, Cleveland, Ohio. (Hearths at Chicago, Ill.; Cleveland, Ohio; Youngstown, Ohio; and Canton, Ohio).
Tennessee Coal, Iron & Railroad Co., Birmingham, Ala. (Hearths at Fairfield, Ala.)
Wheeling Steel Corporation, Wheeling, W. Va. (Hearths at Steubenville, Ohio, and Portsmouth, Ohio.)

The following producers of basic refractories are also possible purchasers of dead-burned magnesia:

Basic Refractories, Inc., 845 Hanna Bldg., Cleveland 15, Ohio.
General Refractories Co., 1600 Real Estate Trust Bldg., Philadelphia 7, Pa.
Harbison-Walker Refractories Co., 1800 Farmers Bank Bldg., Pittsburgh, Pa.
E. J. Lavino and Co., 1528 Walnut St., Philadelphia, Pa.

(Possible buyers of caustic-calcined magnesia

American Enka Corporation, Enka, N. C.
Armour Fertilizer Works, 816 Walton Bldg., Atlanta, Ga.
Asbestolith Mfg. Corporation, 257 Kent St., Brooklyn ,N. Y.
Consolidated Tile & Deck Coverings, 101 Park Ave., New York 17, N. Y.
Dow Chemical Co., Midland, Mich.
Electro-Metallurgical Co., 30 E. 42nd St., New York 17, N. Y.
General Electric Co., 1 River Road, Schenectady, N. Y.
Goodyear Tire & Rubber Co., 1144 E. Market St., Akron 16, Ohio.
Hill Brothers Chemical Co., 2159 Bay St., Los Angeles 21, Calif.
Lasting Products Co., 202 S. Franklintown Road, Baltimore, Md.
Norton Co., 1 New Bond St., Worcester 6, Mass.
Chas. Pfizer & Co., Inc., 11 Bartlett St., Brooklyn 6, N. Y.
F. E. Schundler & Co., Inc., 504 Railroad St., Joliet, Ill.
F. E. Schundler & Co., Inc., 45-15 Vernon Blvd., Long Island City, N. Y.
Westvaco Chlorine Products Corporation, 405 Lexington Ave., New York, N. Y.

MAGNESITE AND BRUCITE

Basic Refractories, Inc., 845 Hanna Bldg., Cleveland 15, Ohio.
General Magnesite & Magnesia Co., 705 Architects Bldg., Philadelphia 3, Pa.
Kaiser Aluminum & Chemical Corp., Kaiser Bldg., Oakland 12, Calif.
Northwest Magnesite Co., 1800 Farmers Bank Bldg., Pittsburgh 22, Pa.
The Paraffine Cos., Inc., 1550 Powell St., Emeryville 8, Calif.
Westvaco Chroline Products Corp., 405 Lexington Ave., New York 17, N. Y.

MANGANESE ORE

(Consumers of Metallurgical-grade Manganese Ore)

Bethlehem Steel Co., Bethlehem, Pa.
Carnegie-Illinois Steel Corp., 436 Seventh Ave., Pittsburgh 30, Pa.
Colorado Fuel & Iron Corp., Pueblo, Colo.
Electro Manganese Corp., Knoxville, Tenn.
Electro Metallurgical Co., 30 East 42nd St., New York 17, N. Y.
Kaiser Steel Co., Fontana, Calif.
Keokuk Electro Metals, Keokuk, Iowa.
E. J. Lavino & Company, 1528 Walnut St., Philadelphia 2, Pa.
Sloss-Sheffield Steel & Iron Co., Birmingham, Ala.
Tennessee Products & Chemical Corp., American National Bank Bldg., Nashville, Tenn.

(Consumers of Battery and Chemical-grade Manganese Ores)

Acme Battery Co., 59 Pearl St., Brooklyn, N. Y.
Bradley & Ekstrom, 320 Market St., San Francisco, Calif.
Bright Star Battery Co., Clifton, N. J.
Burgess Battery Company, Freeport, Ill.
Carus Chemical Co., Inc., 1377 Eighth St., La Salle, Ill.
E. I. du Pont de Nemours & Co., 1007 Market St., Wilmington 98, Del.
Foote Mineral Co., 18 E. Chelten Ave., Philadelphia 44, Pa.
General Dry Batteries, Inc., Cleveland, Ohio.
Lancaster Carbon Co., c/o Ray-O-Vac Co., Madison, Wis.
E. J. Lavino & Company, 1528 Walnut St., Philadelphia 2, Pa.
Marathon Battery Co., Wausau, Wis.
Merck & Co., Inc., Lincoln Ave., Rahway, N. J.
Ray-O-Vac Company, Madison, Wis.
C. Tennant, Sons & Co., Empire State Bldg., New York 1, N. Y.
Tennessee Corporation, East Point, Ga.
Tennessee Eastman Corp., Kingsport, Tenn.
Union Carbide & Carbon Corp., 30 East 42nd St., New York, N. Y.
U. S. Electric Mfg. Corp., 222 West 14th St., New York 11, N. Y.
Winchester Repeating Arms Co., New Haven 4, Conn.
Zinsser & Company, Hastings-on-Hudson 6, N. Y.

MERCURY

Allied Chemical & Dye Corp., The Solvay Process Div., P. O. Box 271, Syracuse, N. Y.
American Cyanamid Co., General Explosives Div., 20 Rockefeller Plaza, New York 20, N. Y.
American Meter Co., Erie, Pa.
Automatic Steel Products, Inc., Mercury Clutch Div., 1201 Camden Ave. S. W., Canton 6, Ohio.
Bailey Meter Co., 1052 Ivanhoe Rd., Cleveland 10, Ohio.
J. T. Baker Chemical Co., Phillipsburg, N. J.
F. W. Berk & Co., Inc., Park Place East, Woodridge, N. J.; 55 New Montgomery St., San Francisco, Cal.
L. D. Caulk, Milford, Del.
E. I. du Pont de Nemours & Co., Inc., Methods Div., Du Pont Bldg., Wilmington 98, Del.
Foxboro Co., Foxboro, Mass.
General Aniline & Film Corp., General Aniline Works Div., 435 Hudson St., New York 14, N. Y.
General Color Co., 24 Avenue B, Newark 5, N. J.
General Electric Co., Purchasing Dept., 1 River Road, Schenectary 5, N. Y.
Mallinckrodt Chemical Works, Jersey City 5, N. J.
Mathieson Chemical Corp., 60 E. 42nd St., New York 17, N. Y.
Merck & Co., Inc., Lincoln Ave., Rahway, N. J.
The Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.
Metalsalts Corp., 200 Wagaraw Rd., Hawthorne, N. J.
Minneapolis Honeywell Regulator Co., 2753 4th Ave. S., Minneapolis 8, Minn.; Brown Instrument Div., 4231 Wayne Ave., Philadelphia, Pa.
Nepera Chemical Co., Inc., Yonkers 2, N. Y.
Phillips Petroleum Co., Bartlesville, Okla.
Public Service Electric & Gas Co., Electric Dept., 80 Park Place, Newark 1, N. J.
Quicksilver Producers Association, 407 Sansome St., San Francisco 11, Calif.
Thomas A. Edison, Inc., Primary Battery Div., Bloomfield, N. J.
Union Carbide & Carbon Corp., 30 E. 42nd St., New York, N. Y.
U. S. Vanadium Corp., Niacet Chemicals Div., Box 807 Niagara Falls, N. Y.
Westinghouse Electric Corp., 306 Fourth Ave., Pittsburgh 30, N. J.
Wyandotte Chemical Corp., Wyandotte, Mich.

MICA

American Mica Works, 47 West St., New York, N. Y.
Asheville Schoonmaker Mica Co., 350 Broadway, New York, N. Y.
Ford Radio & Mica Corp., 536 63rd St., Brooklyn, N. Y.
General Electric Co., 1 River Rd., Schenectady 5, N. Y.
Huse-Liberty Mica Co., 177 Camden St., Boston, Mass.
Industrial Mica Corp., 945 Sixty-first St., Brooklyn, N. Y.
The Macallen Co., 16 Macallan St., Boston, Mass.
Perfection Mica Co., 2400 West Madison St., Chicago, Ill.
Reliance Mica Co., 342 Thirty-ninth St., Brooklyn, N. Y.
Spruce Pine Mica, Inc., Spruce Pine, N. C.
Tar Heel Mica Co., Plum Tree, N. C.
William Brand & Co., 276 Fourth Ave., New York, N. Y.

MICA GRINDERS

(Buyers of Scrap Mica)

Asheville Mica Co., Box 574, Biltmore, N. C.—Dry.
Carolina China Clay Co., Penland, N. C.—Dry.
Concord Mica Corp., 25 Crescent St., Penacook, N. H.—Wet.
English Mica Co., Spruce Pine, N. C.—Wet, dry and micronized.
Franklin Mineral Products Co., Franklin, N. C.—Wet.
Green Mountain Mica Corporation, Gassetts, Vt.—Wet.
Harris Clay Co., Spruce Pine, N. C.—Dry.
Kennedy Minerals Co., Inc., 2550 E. Olympic Blvd., Los Angeles, Calif.—Dry.

Newdale Mica Co., Spruce Pine, N. C.—Dry.
Richmond Mica Corp., 900 Jefferson Ave., Newport News, Va.—Wet.
Southern Mica, Johnson City, Tenn.—Dry.
Thompson-Weinman, Inc., Cartersville, Ga.—Dry.
U. S. Mica Co. of New Jersey, E. Rutherford, N. J.—Dry.
U. S. Mica Mfg. Co., 525 Circle Ave., Forest Park, Ill.—Dry.
Vance, D. T., Plumtree, N. C.—Wet.
Western Nonmetallics, Inc., Pueblo, Colo.—Dry.

NICKEL

American Smelting & Refining Co., 120 Broadway, New York, N. Y.
Cosmo Metal Alloys Co., 275 Front St., New York, N. Y.
J. A. Samuel & Co., 220 Broadway, New York, N. Y.
Sulmet Alloys Co., Inc., Wellington St. and Erie R.R., Clifton, N. J.
United States Smelting, Refining & Mining Co., 1 State St., Boston, Mass.

PERLITE

AiResearch Mfg. Co., Los Angeles, Calif.
AleXitE Engineering Co., Colorado Springs, Colo.
Chapman & Wood, Lincoln Building, Albuquerque, New Mexico.
Dant & Russell, Inc., Dantmore Div., St. Helena, Ore.
W. D. Evans, Phoenix, Arizona.
Goodyear Farms, Litchfield Park, Ariz.
Greggco Plaster Aggregate, Gregg Products Co., 550 Oakdale St., S. E. Grand Rapids 7, Mich.
Hancock Plastering Co., Mesa, Ariz.
Richard Kiessling, Phoenix, Ariz.
Elliott Long, Ray, Ariz.
Pacific Ryolex Corp., 3941 Goodwin Ave., Los Angeles 25, Calif.
Perlite Mfg. Co., Carnegie, Pa.
Rhodes & Reynolds, Phoenix, Ariz.
U. S. Gypsum Co., 300 W. Adams Street, Chicago 6, Ill.
Utah Pumice & Perlite Co., Inc., Salt Lake City, Utah.
R. L. Watson, Phoenix, Ariz.
Wilson Research Engineering & Exploration Co., Box 14, Veyo, Utah.

PLATINUM

The American Platinum Works, 225 New Jersey R. R. Ave., Newark 5, N. J.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Sigmund Cohn & Co., 44 Gold St., New York 7, N. Y.
Goldsmith Bros. Smelting & Refining Co., 58 E. Washington St., Chicago 36, Ill.
Handy & Harman, 82 Fulton St., New York 7, N. Y.
Johnson, Matthey & Co., Inc., 608 Fifth Ave., New York 20, N. Y.
Kastenhuber & Lehrfeld, Inc., 21 West 46th St., New York 19, N. Y.
Montana Assay Office, 610 S.W. 2nd Ave., Portland 4, Ore.
Pacific Platinum Works, 253 S. Broadway, Los Angeles 12, Calif.
J. A. Samuel & Co., 220 Broadway, New York 7, N. Y.
Wildberg Bros. Smelting & Refining Co., 742 Market St., San Francisco 2, Calif.
Western Gold & Platinum Works, 589 Bryant St., San Francisco 7, Calif.

PYRITE

American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.
Anaconda Copper Mining Co., 25 Broadway, New York 4, N. Y.
Baugh Chemical Company, Baltimore, Maryland.
Davidson Chemical Corporation, 20 Hopkins Place, Baltimore 3, Maryland.
Foote Mineral Company, 18 West Chelten Ave., Philadelphia 44, Pa.
General Chemical Division, Allied Chemical & Dye Corp., P. O. Box 4040, Denver, Colorado.
Norton Company, Worcester, Massachusetts.
Owens Illinois Glass Company, Streator, Illinois.
Reliance Phosphate Company, Savannah, Georgia.
Stauffer Chemical Company, 636 California St., San Francisco 8, Calif.

QUARTZ

(Consumer of Radio-Grade)

Rex Bassett, Inc., Bassett Bldg., Ft. Lauderdale, Fla.
Bendix Radio, Div. of Bendix Aviation Corp., Baltimore 4, Md.
Bliley Electric Co., 200 Union Station Bldg., Erie, Pa.
Breon Labs., 520 Evergreen Rd., Williamsport, Pa.
Commercial Equipment Co., 112 W. 18th St., Kansas City 8, Mo.
Crystal Research Laboratories, 29 Allyn St., Hartford, Conn.
Dallons Laboratories, 5066 Santa Monica Blvd., Los Angeles 27, Calif.
Federal Telephone & Radio Corp., 100 Kingland Rd., Clifton, N. J.
General Electric Co., Electronics Dept., Syracuse, N. Y.
P. R. Hoffman Co., 321 Cherry St., Carlisle, Pa.
The Hunt Corp., 435 Lincoln St., Carlisle, Pa.
The James Knights Company, 101 E. Church St., Sandwich, Ill.
Kaar Engineering Co., 619 Emerson St., Palo Alto, Calif.
August E. Miller, 9226 Hudson Blvd., North Bergen, N. J.
Monitor Piezo Products Co., 815 Fremont Ave., South Pasadena, Calif.
Peterson Radio Co., Inc., 2800 W. Broadway, Council Bluffs, Iowa.
Premier Crystal Laboratories, Inc., 63 Park Row, New York 7, N. Y.
RCA Victor Div. of Radio Corp. of America, Front and Cooper Sts., Camden, N. J.
Standard Piezo Co., 127 Cedar St., Carlisle, Pa.
Valpey Crystal Corp., 1244 Highland St., Holliston, Mass.
V. Precision Instrument Co., 57-C2 Hoffman Dr., Elmhurst, N. Y.
Western Electric Company, Inc., 195 Broadway, New York 7, N. Y.

RARE-EARTH ORES

(Cerium ores, monazite sand, bastnaesite, other thorium-bearing ores.)

Lindsay Light & Chemical Co., West Chicago, Illinois.
Maywood Chemical Works, Maywood, N. J.
Rare Earths, Inc., R. D. #1, Paterson, N. J.

SPODUMENE

Corning Glass Works, Corning, N. Y.
Foote Mineral Co., 12 E. Chelton Ave., Philadelphia 44, Pa.
General Electric Co., 1 River Rd., Schenectady, N. Y.
Maywood Chemical Works, Maywood, N. J.
Metalloy Corp., 1320 Rand Tower, Minneapolis, Minn.
National Enameling and Stamping Co., 270 N. 12th St., Milwaukee, Wis.
Owens Corning Fibreglass Corp., Newark, Ohio.

STRONTIUM ORES

Associated Metals & Minerals Corp., 40 Rector St., New York, N. Y.
J. T. Baker Chemical Co., Phillipsburg, N. J.
Barium Products, Ltd., Modesto, Calif.
Barium Reduction Corp., Charleston, W. Va.
E. I. du Pont de Nemours & Co., Inc., 11th & Orange Sts., Wilmington, Del.
Foote Mineral Co., Inc., 12 E. Chelten Ave., Philadelphia, Pa. (minerals).
General Electric Co., 1 River Road, Schenectady, N. Y.
Chas. Hardy, 415 Lexington Ave., New York, N. Y.
Harshaw Chemical Co., 1933 E. 97th St., Cleveland, Ohio.
Hummel Chemical Co., 90 West St., New York, N. Y.
Jungman & Co., 157 Chambers St., New York, N. Y.
J. A. Samuel & Co., 220 Broadway, New York, N. Y.

TANTALITE AND COLUMBITE

Tantalite—Fansteel Metallurgical Corp., North Chicago, Ill.
Columbite—Electro Metallurgical Co., 30 E. 42nd St., New York 17, N. Y.

TIN

American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.
Metal & Thermit Corp., 120 Broadway, New York 5, N. Y.
Reconstruction Finance Corp., Office of Metals Reserve, 811 Vermont Ave., Washington 25, D. C.
C. Tennant, Sons & Co., Empire State Bldg., New York 1, N. Y.
Vulcan Detinning Co., Sewaren, N. J.

TITANIUM MINERALS

(Ilmenite—Pigment Manufacturers)

American Cyanamid Co., Calco Chemical Div., Easton Turnpike, Bound Brook, N. J.
The Chemical & Pigment Co., 6401 St. Helena Ave., Baltimore 22, Md.
E. I. du Pont de Nemours & Co., Inc., Methods Div., Du Pont Bldg., Wilmington 98, Del.
National Lead Co., 111 Broadway, New York 6, N. Y.

(Ilemite & Rutile—Alloy Manufacturers)

Metal & Thermit Corp., 120 Broadway, New York 5, N. Y.
National Lead Co., 111 Broadway, New York 6, N. Y.
Titanium Alloy Mfg. Co., 111 Broadway, New York 6, N. Y.
Union Carbide and Carbon Corp., Electro Metallurgical Div., 30 East 42nd St., New York 17, N. Y.
Vanadium Corporation of America, 420 Lexington Ave., New York 17, N. Y.

(Rutile—Welding-rod Manufacturers)

Arcrods Corporation, 60 East 42nd St., New York 17, N. Y.
Harnischfeger Corp., 4400 W. National St., Milwaukee, Wisc.
Hollup Corp., 4700 W. 19th St., Chicago 50, Ill.
Metal & Thermit Corp., 120 Broadway, New York 5, N. Y.
Smith, A. O., Corp., 3533 N. 27th Street, Milwaukee 1, Wisc.

(Rutile—Dealers)

Foote Mineral Co., 18 W. Chelten Ave., Philadelphia 44, Pa.
International Titanium Corp., 111 Broadway, New York 6, N. Y.
National Lead Co., 111 Broadway, New York 6, N. Y.
Orefraction, Inc., 7425 Thomas St., Pittsburgh 8, Pa.
Philipp Bros., Inc., 70 Pine Street, New York 5, N. Y.

URANIUM-VANADIUM ORES

Atomic Energy Commission, Ore Purchasing Depot, Monticello, Utah, or Marysvale, Utah
Climax Uranium Co., Grand Junction, Colo.
U. S. Vanadium Co., Rifle, Colo. or Uravan, Colo.
Vanadium Corp. of America, Durango, Colo. or Naturita, Colo.
Vitro Chemical Co., 600 W. 33rd St., Salt Lake City, Utah

ZINC

The American Metal Co., Ltd., 61 Broadway, New York 6, N. Y.
American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.
American Zinc Co. of Illinois, 1600 Paul Brown Bldg., St. Louis, Mo.
Anaconda Copper Mining Co., 25 Broadway, New York 4, N. Y.
Associated Metals & Minerals Corp., 75 West St., New York 6, N. Y.
Athletic Mining & Smelting Co., Fort Smith, Ark.
E. I. du Pont de Nemours & Co., 1007 Market St., Wilmington 98, Del.
Eagle-Picher Co., American Bldg., Cincinnati 1, Ohio.
Eagle-Picher Mining & Smelting Co., Miami, Okla.
W. R. Grace & Company, Hanover Square, New York, N. Y.
The Hegler Zinc Company, Danville, Ill.
International Minerals & Metals Corp., 11 Broadway, New York 4, N. Y.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.
Metal Traders, Inc., 67 Wall St., New York, N. Y.
New Jersey Zinc Co., 160 Front St., New York 7, N. Y.
Philipp Brothers, Inc., 70 Pine St., New York 5, N. Y.
St. Joseph Lead Co., 250 Park Ave., New York 17, N. Y.
The Sherwin-Williams Co., Ozark Smelting & Mining Division, 101 Prospect Ave., N.W., Cleveland 1, Ohio.
Sullivan Mining Co., Box 209, Kellogg, Idaho.
C. Tennant, Sons & Co., Empire State Bldg., New York 1, N. Y.
U. S. Steel Corp., 436 Seventh Ave., Pittsburgh 30, Pa.
United Zinc Smelting Corp., 50 Union Square, New York 3, N. Y.

ZIRCON

F. W. Berk & Co., Woodridge, N. J.
Cohart Refractories Co., Louisville, Ky.
Electro Metallurgical Div., Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
Foote Mineral Co., 18 W. Chelten Ave., Philadelphia 44, Pa.
International Titanium Corp., 120 Broadway, New York 5, N. Y.
Orefraction, Inc., 7505 Meade St., Pittsburgh, Pa.
Titanium Alloy Mfg. Div., National Lead Co., 111 Broadway, New York 6, N. Y.

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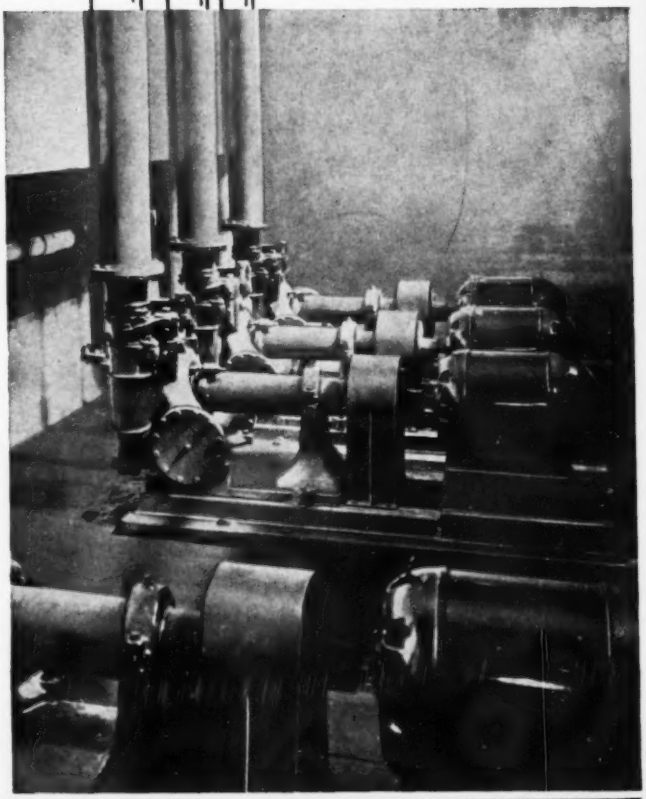

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